

# This Week in

STEEL  
The Metalworking Weekly

July 21, 1958  
Vol. 143 No. 3

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Russia is using price fighting tactics to open up new economic fronts in the Free World market place.

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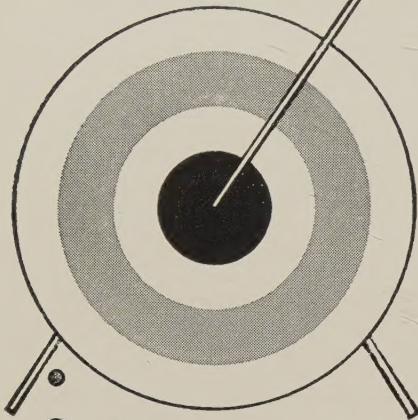
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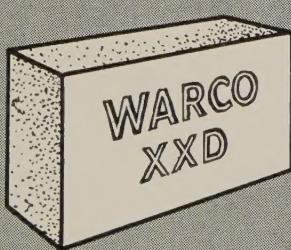
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## behind the scenes



### We Gooted Again!

Once upon a time when the world was enveloped by terror, and the massive forces of evil were pressing against the flanks of our beloved Republic, it came to pass that ol' Shrdlu was enveloped in the uniform of a private, trained at public expense, and instructed to go forth and strike counterterror to the heart of the Axis Powers. One morning, in the discharge of these stern instructions, we found ourselves part of a latrine detail, digging trenches in the sand by the shores of the sounding sea. One of our fellow warriors had captured a land crab, about the size of a soup plate, and we all stopped to admire it.

"There's something about the repulsive and idiotic expression of this beast," we remarked to an appreciative audience, "that reminds us of the poor little sawed-off, baby-faced, pink-gummed, half-witted, juvenile degenerate who acts as our lieutenant."

"Would you mind repeating that, soldier?" came the clear young tones of an officer and a gentleman. "Can you explain why you are stalling, inciting insurrection, and showing disrespect for an officer?"

The only possible answer—and the one that serves in civilian as well as in military life—was, "No excuse, sir!"

Two weeks ago, we directed your attention to an article on Russia by Editor-in-Chief Irwin Such. "Turn to Page 40," we wrote airily. Well, picture 75,000 readers turning at once to Page 40; why, the whispering thunder of all those pages flipping under carefully manicured thumbs would have made a noise like a tidal wave. So what happened when Page 40 was exposed to STEEL's readers? There was no sign of Irwin, or Russia, either. By way of explanation, we can say that the assembly of a weekly magazine is a tricky and exacting operation; that slips are always possible; that the best possible answer is an honest red face and a "No excuse, sir!"

### A Bitter Note

However, nobody in this business can bat a thousand, as a gimlet-eyed reader from Seattle can testify. In the June 23 STEEL, an item headed "Duplicating Space Projects Set" carried a mention of Boeing and Martin, competing missile-aircraft manufacturers, and the contracts they had received to develop an advanced version of North American's X-15 project. The new project will be termed Dyna-Soar, but three times STEEL spelled it

"Dyna-Sour."  
No excuse, sir!

### Thanking the Nice Gentleman

Chicago Editor Bill Dean has reason to feel confused. He is a young man, of average height and weight, and looks just like any other young man who has washed, combed, shaved, dressed, and brushed himself. Wherefore, when he boarded a plane bound for Cleveland recently, and a lady with a little girl accosted him, he thought nothing of it. He knew he didn't resemble Gargantua, or Jack the Ripper, or a zoot-suiter from Olivera Street, so he smiled easily, showing his Gleem-brushed teeth (only had time to brush 'em once that day, you know) and said "Hello!" or something equally relaxed.

The lady explained that the little girl was nine years old, and would be permitted to travel at reduced rates if accompanied by an adult. Would the gentleman sit with her—the child, that is—on the flight to Cleveland, and so save them—Well, what would you do? That's exactly what Bill did. He said the kid whipped out a set of comic books, and settled down like a veteran of the airways. She was no trouble at all.

When the plane landed in Cleveland, Bill stayed with her until she sighted some of her relatives. As they came to pick her up, he heard her say, "We couldn't find a nice old lady this time, so I got stuck with that old square!"

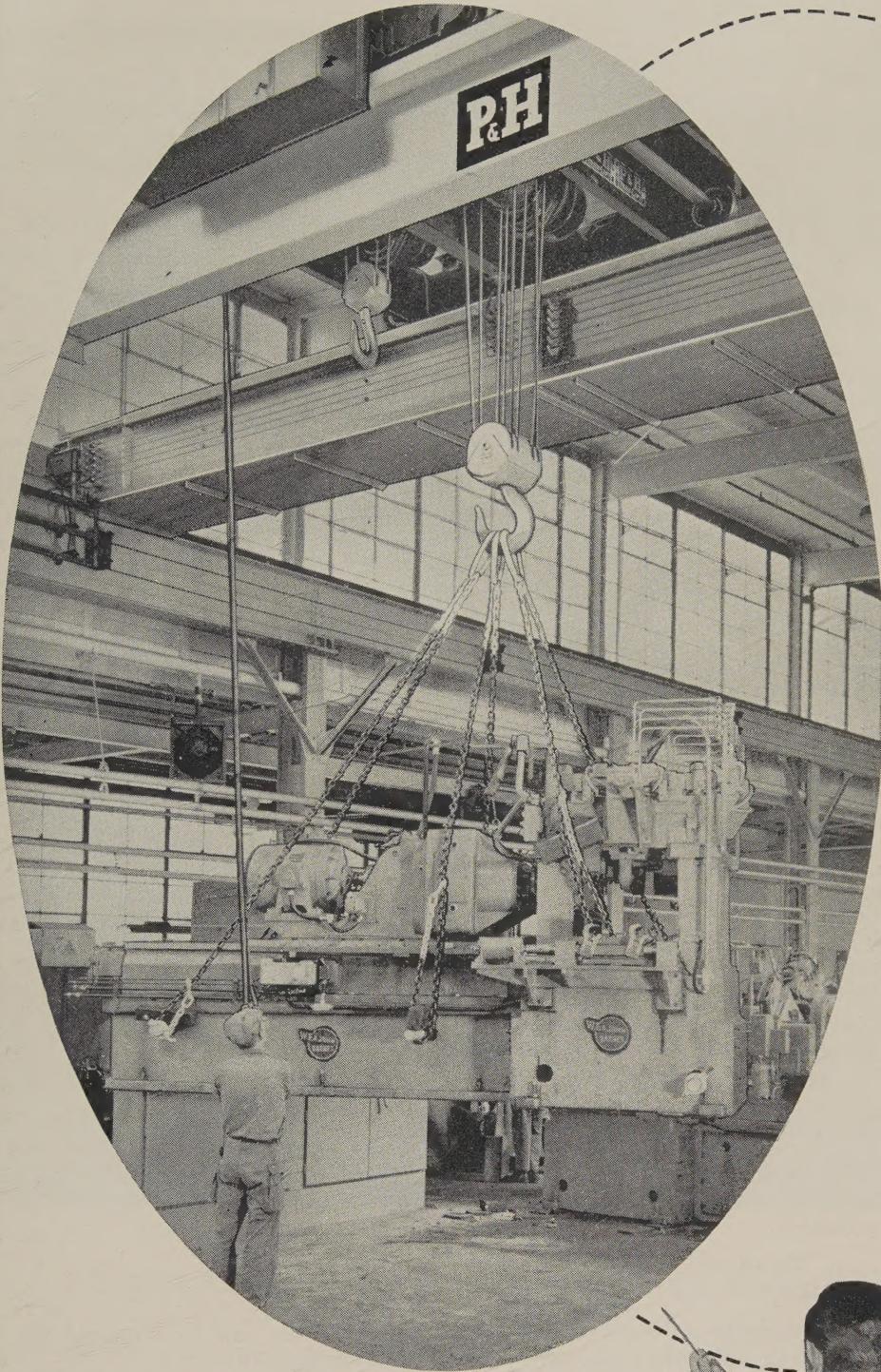
### Soft Job

On the back page of July's *Better Castings*, house organ of Continental Copper & Steel Industries Inc., appears the following:

"As everybody knows, an executive has practically nothing to do—except decide what has to be done—tell someone to do it—listen to reasons why it shouldn't be done—why it should be done by somebody else—to follow up to see if the thing has been done—to discover it has not been done—to listen to excuses from the person who should have done it—to discover it finally has been done, but incorrectly—to point out how it should have been done—to conclude that, as long as it has been done, it might as well be left the way it is—to consider how much simpler it would have been if he had done it himself—to discover it took two days to find out why it took someone three weeks to do it wrong."

Executives have nothing to do.

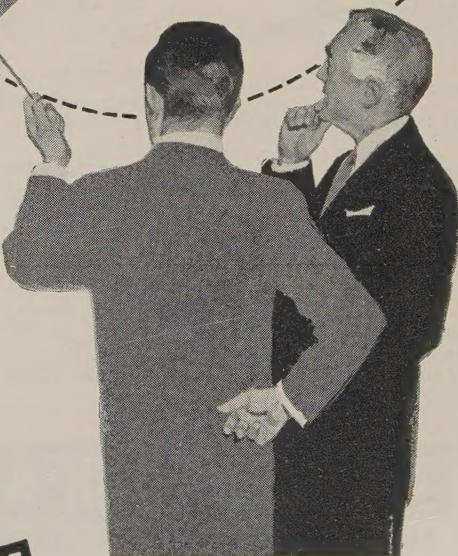
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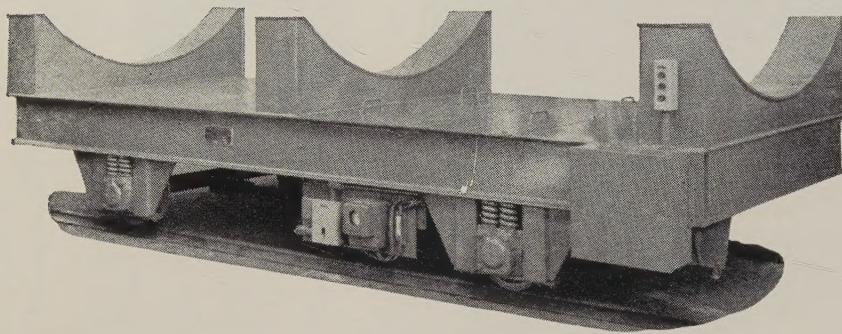
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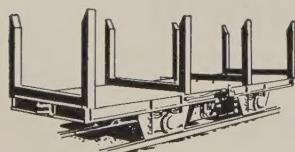
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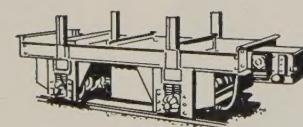
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## LETTERS TO THE EDITORS

### Wants Replacement Formula

Please send two copies of the article which appeared in STEEL, June 20, 1955, p. 99, based on the Machinery & Allied Products Institute's formula for machinery replacement, developed in "Dynamic Equipment Policy" by George Terborgh.

As mentioned in the article, "Price of Not Re-equipping" (June 23, Page 51), this work has been brought up to date and we understand copies are now available.

C. F. Fritch Jr.

Plant Manager  
National Cylinder Gas Div.  
Chemetron Corp.  
Chicago

• "Dynamic Equipment Policy" is a book. The revised edition is for sale by Machinery & Allied Products Institute, 1200 18th St. N.W., Washington 6, D. C.

### Requests Reprints for Salesmen



Please send a copy of "Price of Not Re-Equipping" (June 23, Page 51). We would appreciate permission to reproduce this article for distribution among our sales and service personnel.

Noel L. Cooperider

Service Manager  
Dry Cleaners' Equipment  
Butler Mfg. Co.  
Kansas City, Mo.

• • •

Will you send us a copy of this interesting article?

John Zakanycz

Manufacturing Staff  
Worthington Corp.  
Harrison, N. J.

### Ways To Move Furnace Parts

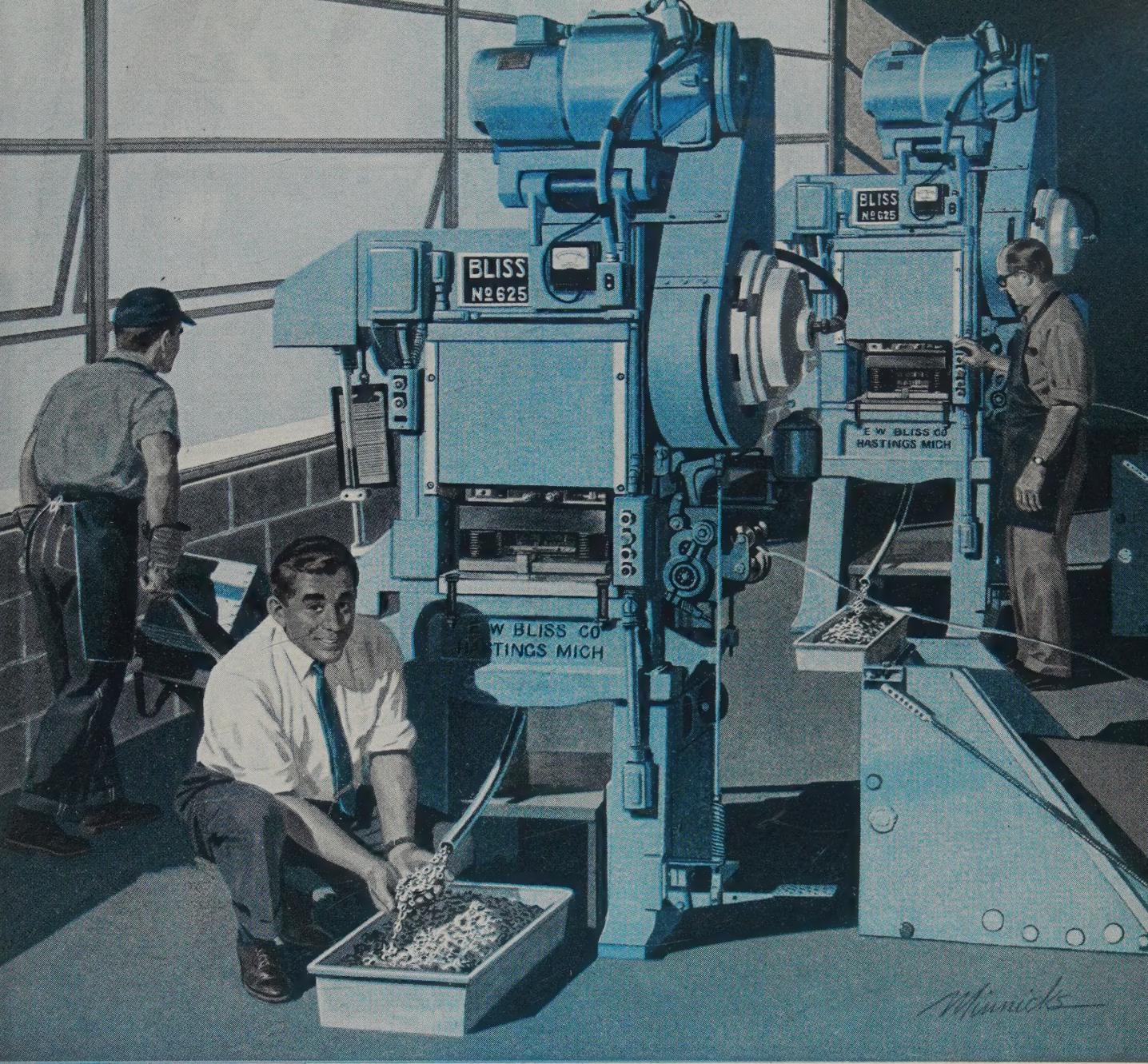
We have received your magazine for many years and we would appreciate a few copies of your interesting article, "18 Ways to Move Parts in a Furnace" (June 23, Page 90).

M. Dellagatta

American Saar Steel Corp.  
New York

### Seeks Missile Contractor Guide

In your Metalworking Outlook item, "Missile Subcontracting Notes" (June 23, (Please turn to Page 12)



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## LETTERS

(Concluded from Page 10)

Page 42), you say the Association of Missile and Rocket Industries offers a salesman's guide listing missile contractors and key personnel.

Will you supply me with the street address of the association please?

G. S. Berge

Manager-Marketing  
Plastics Dept.  
General Electric Co.  
Chicago

• The address is 1079 National Press Bldg., Washington 4, D. C. Kendall Hoyt is executive director.

### Exploring Space Age Metals

I would appreciate a copy of the fine article, "Needed: Facts on Space Age Metals" (June 16, Page 102).

E. B. Evans

Assistant Professor  
Department of Metallurgical Engineering  
Case Institute of Technology  
Cleveland

### Pricing Article Is Top Notch

Please send a copy of your topnotch article, "Pricing for Profit" (June 16, Page 87).

N. E. Berkholz

Process Engineer  
Ordnance Div.  
Minneapolis-Honeywell Regulator Co.  
Hopkins, Minn.

This article is one of the finest I have read on this subject. We would be grateful for two copies for circulation in our management group.

Louis E. Harrod

Winchester Electronics Inc.  
Norwalk, Conn.

We believe this article will be of great assistance to us when we consider forthcoming price increases of our industrial products.

Donald R. Herzog

Solar Aircraft Co.  
San Diego, Calif.

### Timely Value to Company

We would appreciate six copies of the article, "Electrical Steels: How To Choose and Improve Them" (June 9, Page 116). We find this article to be of great interest to our salesmen and order deskmen. Its educational value to our company is both real and timely.

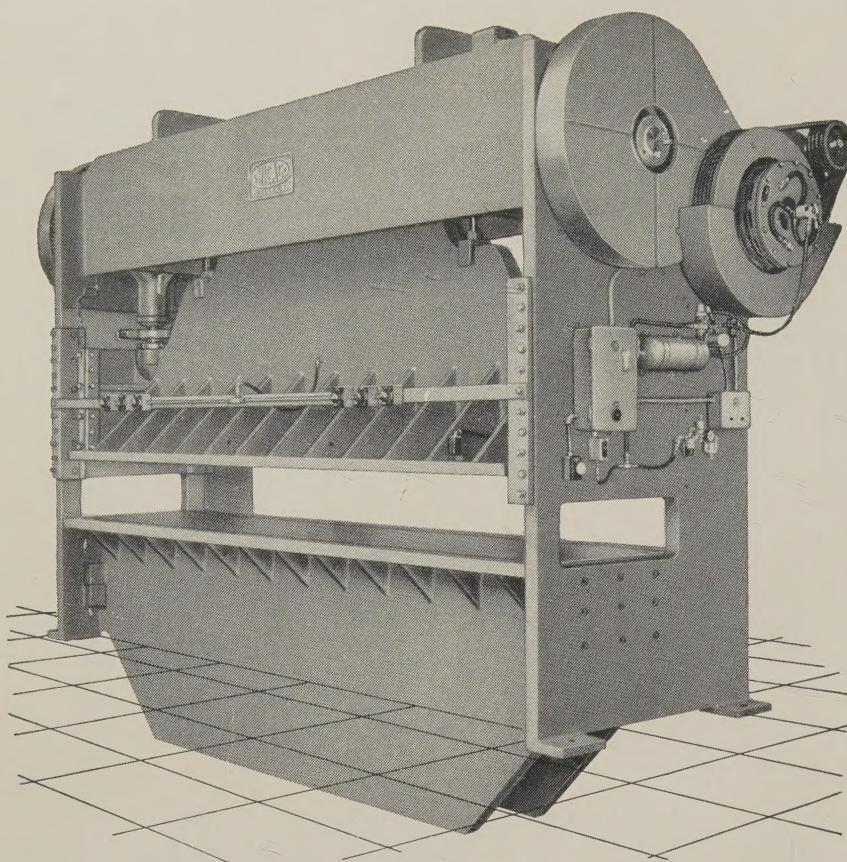
Don Swanbeck

Sales Manager  
American Steel & Aluminum Corp. of Massachusetts  
Cambridge, Mass.

### Series Unusually Interesting

Kindly send four copies of your Program for Management articles published so far this year. We have found them unusually interesting.

M. E. Wertz  
Director of Industrial & Labor Relations  
Lehigh Structural Steel Co.  
Allentown, Pa.



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# CALENDAR OF MEETINGS

July 23-26, National Tool & Die Manufacturers Association: Summer board meeting, Mt. Washington Hotel, Bretton Woods, N. H. Association's address: 907 Public Square Bldg., Cleveland 13, Ohio. Executive vice president: George S. Eaton.

Aug. 11-14, Society of Automotive Engineers: National west coast meeting, Ambassador Hotel, Los Angeles. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Aug. 19-22, American Institute of Electrical Engineers: Pacific general meeting, Hotel Senator, Sacramento, Calif. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Aug. 19-22, Western Electronic Show & Convention: Pan-Pacific Auditorium, Los Angeles. Information: WESCON, 1435 S. LaCienega Blvd., Los Angeles 35, Calif.

Sept. 7-12, American Chemical Society: National chemical exposition and conference, International Amphitheatre, Chicago. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 8-11, Society of Automotive Engineers: Farm, construction, and industrial machinery meeting, production forum and engineering display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Sept. 10-11, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

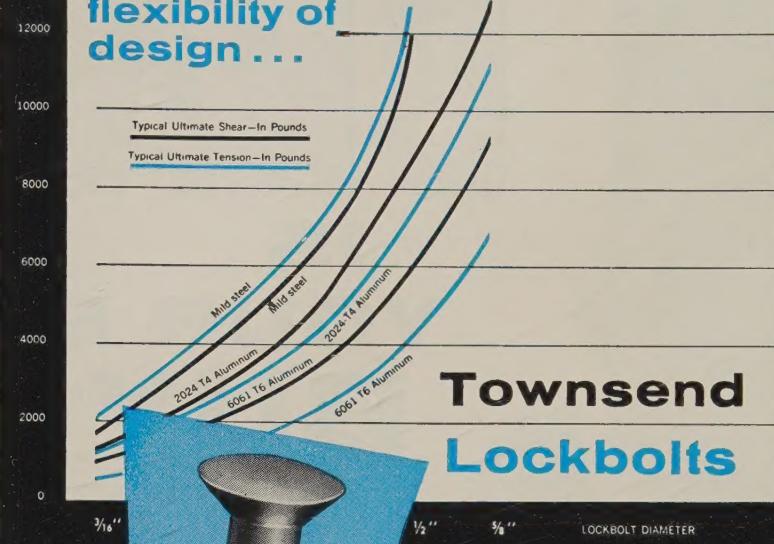
Sept. 11-12, Refractories Institute: Fall meeting, Broadmoor Hotel, Colorado Springs, Colo. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

Sept. 14-19, Instrument Society of America: Annual instrument-automation conference and exhibit, Convention Hall, Philadelphia. Society's address: 313 Sixth St., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

Sept. 16-18, Electronic Industries Association: Fall meeting, St. Francis Hotel, San Francisco. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Sept. 17-19, National Industrial Conference Board Inc.: General marketing conference, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

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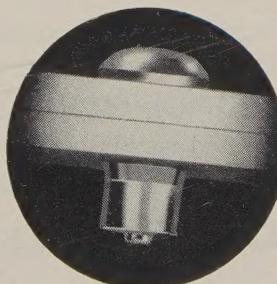
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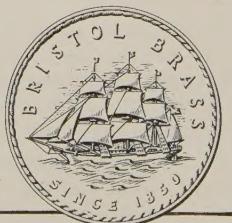
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July 21, 1958

# Metalworking Outlook

## Defense Spending To Rise

Look for the Mideast crisis to boost defense spending, particularly the metalworking part of it. Since the end of the Korean War, some 13 per cent of metalworking's dollar volume has been going to defense each year. That ratio is likely to rise, even if the presence of U. S. troops keeps the lid on in Lebanon. About 10 per cent of the general economy has been devoted to defense since Korea.

## Canadian-U. S. Customs Union?

Don't expect much action soon on a Canadian-U. S. customs union or free-trade area. President Eisenhower's trip to Canada revived talk about the matter, and a recent Rockefeller report advocates such an arrangement. Sentiment for it is stronger south of the border than north. But you can watch for more attention being given to ways to increase north-south trade.

## Pressure Builds in Auto Talks

A good bet: By the end of this month, General Motors Corp. will offer the United Auto Workers a contract extension of two years, with additional supplemental unemployment and pension benefits. The offer will differ from the earlier one chiefly in sweeter SUB and pension deals. If the UAW won't buy the proposal, GM will probably get ready to take a strike. The auto negotiations resumed last week, with the union predicting it will have new contracts with the Big Three "before new models roll off the assembly line this fall." GM has signed two-year extensions with eight unions other than the UAW. The typical agreement calls for a wage boost of 6 cents an hour or 2½ per cent (whichever is greater), effective May 29, 1958, and May 29, 1959.

## \$106 per Man per Month in Fringes

Fringe benefits average \$106.07 per month for each hourly employee of Ohio Seamless Tube Div. of Copperweld Steel Co., Shelby, Ohio. Here's the average breakdown: Vacation pay—\$22.18, holiday pay—\$11.96, lunch period pay—\$11.25, pension funding—\$25.49, social security—\$7.88, group insurance—\$10, compensation insurance—\$2.22, unemployment insurance—\$3.08, supplemental unemployment benefits—\$8.09, miscellaneous—\$3.92.

## Middle Managers Win Pay Boost

The salary of the "average" business executive in middle management rose 4.8 per cent—from \$11,240 a year to \$11,800—from 1957 to 1958, reports the American Management Association. The increase from 1956 to 1957 was 5.8 per cent. The Canadian (with a 5.2 per cent rise) did somewhat better than his U. S. counterpart, but Canadian middle managers are paid on a

# **Metalworking Outlook**

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lower scale. Bonuses were paid to 37 per cent of the executives covered, vs. 45 per cent the year before.

## **Can the Minerals Bill Make It?**

Passage by the Senate of the Seaton plan for domestic minerals stabilization raised hopes that it can get through the House before the go-home fever strikes. In the Senate, only 12 "nays" were recorded, although 14 senators didn't vote. House committee hearings were scheduled on the measure late last week, and chances are good that it will come to the floor without major modifications, but odds for House passage run about 60-40 against it.

## **Industry To Push Science for Youngsters**

As a long range attack on the shortage of electronics and missile engineers (which promises to become rapidly more serious), the Pentagon and the President's Committee on Scientists & Engineers want defense contractors to back local "action" groups for improving science education and encouraging competent youths to enter science and engineering. Interested firms can check with local Defense Department sources for summaries of programs. Local installation commanders are also ready to help youth missile groups along the lines of a program suggested by Kendall Hoyt of the Association of Missile & Rocket Industries. The point of all this activity: Private industry must do everything it can to promote interest so engineers will be in ready supply in the 1960s and 1970s when missiles come of age, says Mr. Hoyt.

## **The Peaceful Atom**

Industry may harness the power of nuclear explosives for peaceful uses by 1960. The Atomic Energy Commission is studying the possibility of using the atom to create harbors, recover oil, and mine. The first project may be the excavation of a harbor on the northwest coast of Alaska.

## **Rail Capital Spending Skids**

Railroads estimate they'll spend \$706 million on capital additions and improvements in 1958. That's 49 per cent below the 1957 figure when the roads spent \$1.4 billion. Even with the government help provided in the Smathers Bill, passed by the Senate and pending before the House, the carriers are not likely to boost spending much this year. The bill provides for \$700 million of federally guaranteed bank loans to help the rails finance improvements.

## **Straws in the Wind**

The International Labor Organization has forwarded to its 79 member governments a proposal that pooled orders for standard types of machinery be used as an antidote to the recession . . . Ormet Corp. has brought in the second of five potlines at its \$110 million primary aluminum reduction works at Omal, Ohio; by yearend, Ormet expects to have all five lines operating to produce 180,000 tons annually . . . The Army Signal Corps anticipates a fivefold boost in its use of electronic equipment.

July 21, 1958



## Russia's New Hot War

Soviet Russia is camouflaging her real intentions behind a screen of confusion.

Her leaders talk about a high level summit conference to iron out differences between the Soviet bloc and the West. They crack down on Tito's so-called "Revisionism," or defection from Moscow's control. They mark Poland's Gomulka for their next purge.

At the same time, they wage economic war as the easiest approach to accomplishing their political objective of world communism.

Because Russia's industry is state owned, Khrushchev can direct production where he pleases without regard to costs and selling prices. Seventy per cent goes toward building industry at home, expanding industry in other communist countries (especially China), and extending Russia's economic influence in the Western World.

A case in point: Look at how Russia is invading the international aluminum market. Her pig aluminum customers include Belgium, France, Italy, and even the U. S. Part of the aluminum sold to other countries is also coming to the U. S. as fabricated products at prices 15 cents under those of the domestic market. In addition, our import duty on aluminum was cut from 1 1/3 to 1 1/4 cents on July 1.

This is going on at a time when the U. S. aluminum industry is having its troubles. Of 2,062,500 tons of basic capacity, 603,500 tons stand idle. Some 20,000 people are without work. Construction on 511,000 tons of additional capacity is largely held up because demand is lacking.

Much of our expansion in aluminum took place during World War II and the Korean War at an investment of more than \$2.5 billion.

In contrast, Russia is building at least three new plants in Siberia while dumping metal that became surplus when her military requirements changed.

Aluminum is only one example. Russia is making metal cutting machine tools at the rate of 133,000 a year—far more than we're producing. The Russian machine tools are finding their way into Western countries in increasing numbers.

So far, Russia's economic competition has been regarded by U. S. government and industry as nothing more than an annoyance. It now has arrived as a hot war far more threatening than the cold war on the political front.

*Irwin H. Such*

EDITOR-IN-CHIEF



washed

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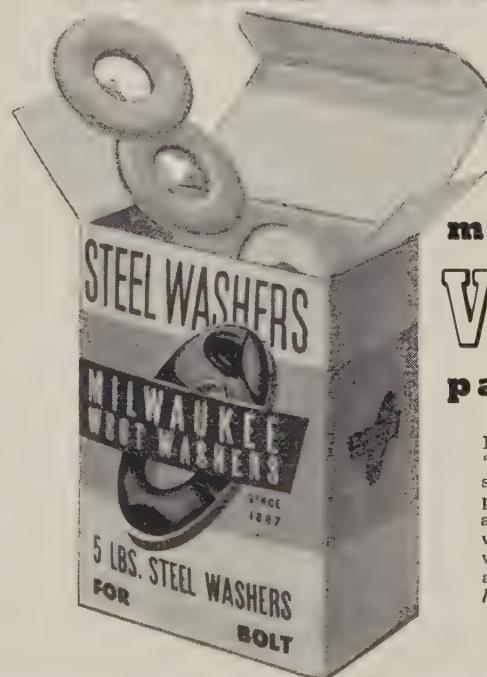
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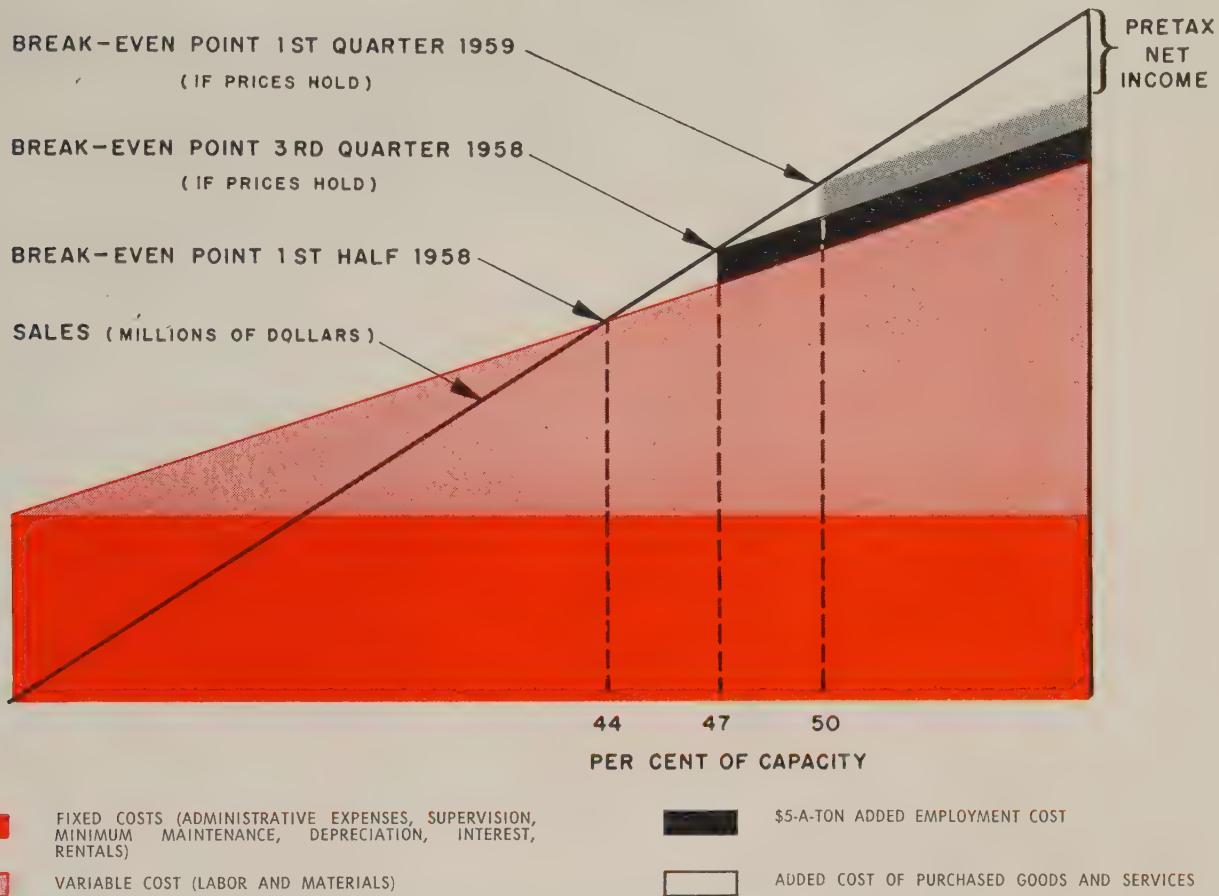
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## How Higher Costs Will Affect J&L's Operations



## Rising: Prices or Break-Even Points?

THE steel industry's break-even point, ordinarily of interest only to specialists, is a matter of widespread concern this year.

Example: Added employment costs incurred July 1 (about \$5 a ton) will boost Jones & Laughlin Steel Corp.'s break-even point from 44 per cent in the first half to 47 per cent in the third quarter. If prices hold, pass-along costs will push it to 50 per cent by the first quarter of 1959.

For the first time in years, steelmakers are operating at a marginal level, worrying more about making a profit than the size of it. During the first three months, they earned \$135 million on sales of \$2.7 billion. Average earnings were 5

cents on the sales dollar, but results varied from plus 7.8 cents to minus 3.

**Small Margins**—Avery C. Adams, president of J&L, brought the issue into sharp focus when he announced that his company made a small first quarter profit (1.1 per cent of sales) while operating at 57 per cent of capacity and shipping at 52 per cent. J&L made 2.6 per cent on sales in the second quarter while producing at 55 per cent and shipping at 55.5 per cent.

J&L would break even at 44 per cent, he added, "after completion of our current construction program and after the new units are broken in." He assumed, of course, that there would be no changes in the

employment cost-selling price relationship, product mix, or "other material factors."

"The relationship of employment costs to selling prices underpins the whole thing," says one steel executive. "If your labor bill goes up without a corresponding increase in prices, your break-even point moves up too."

If J&L operates at 65 per cent during the third quarter (Mr. Adams' projection for the industry) and sells at current prices, it will net about \$8.25 million instead of \$10.5 million, the amount forecast when it was assumed that the employment cost-selling price relationship would not be altered.

**Needed: Higher Prices**—If J&L

and other steelmakers get a satisfactory price adjustment (\$5 or \$6 a ton), their break-even points won't be impaired during the second half. They'll pay more for purchased goods and services, but not before next year's first quarter. By that time, it will cost them \$10 more to produce a ton of steel than it did in June.

**Product Mix Important**—It's well to remember that product mix is often a better index to profitability than the production rate. This is especially true for smaller companies. A specialty producer might make a profit at 35 per cent of capacity by concentrating on its most lucrative items but bankrupt itself at 65 per cent by making too many tons of low-profit steel.

Larger companies tend to have lower break-even points than smaller ones because they're more highly integrated.

Steelmakers say the break-even point changes from week to week within a company and from day to day within the industry even when there are no dramatic cost changes, such as wage or price increases. Reason: There's a wide range of efficiency in the industry's equipment.

**J&L's Method**—Undismayed by problems involved, Jones & Laughlin uses this method to chart its earnings: Starting with its salesmen, it asks them—on a product - by - product basis—what they would expect to sell if conditions were "normal." Then it asks what they would sell at various operating levels between 40 and 100 per cent. Using expense budgets, the company "manufactures" the products on paper. It tries to establish a budget that's flexible enough to serve at several levels.

Armed with the salesmen's estimates, J&L asks its operating people what machines they would use, how they'd crew them, and how many turns they'd operate if they could produce just so many tons a month. Then maintenance men are asked how much maintenance they would do. Finally, it asks top management whether the performance standards decided upon would be satisfactory under given conditions. If management says yes, J&L has a master plan. Every department knows its job at each operating level.



SKF Industries Inc.

## Bearings Recover Slightly

Industry spokesmen expect 1958 sales to be under last year's levels. But they point to signs of an upturn in the second half. Export market is also slow

SALES of antifriction bearings are on the upturn, but most industry estimates indicate the year as a whole will be down.

One manufacturer estimates that second half business will be about 5 per cent better than it was in the first. Another believes the last half will show "definite improvement." He points to strong indications "that inventory backlogs are being worked down to where it is reasonable to expect an upturn in purchases."

**Estimates Vary**—But E. R. Broden, president and chairman, SKF Industries Inc., Philadelphia, believes business will be about 15 to 20 per cent under what it was in 1956 and 1957. Another manufac-

turer expects industry sales this year to hit \$571.7 million, vs. \$666.7 million in 1957. McGill Mfg. Co. Inc., Valparaiso, Ind., doesn't expect much change in its sales, "although shipments may be off 10 per cent."

Buying by major consumers (automotive, machinery, replacement, and military) has been generally slow, especially heavy machinery.

J. F. Oehlhoffen, vice president, Kaydon Engineering Corp., Muskegon, Mich., expects his firm's business in the second half to be about 30 per cent better than the first half's and the year as a whole to compare "favorably with 1957 . . . probably be a little better."

**Bright Spots**—Holding up best are

industries doing business with the government (aircraft, missiles, and related industries) and the mining, crushing, and road machinery fields. One of the hardest hit, the automotive industry, should bounce back with new models this fall, believes Mr. Oehlhoffen.

Kaydon is now building bearings 165 in. in diameter for radar equipment.

**Farm Buying**—Dodge Mfg. Corp., Mishawaka, Ind., manufacturer of mounted antifriction bearings, reports that agricultural equipment needs are holding up well and that sales to the steel industry have improved, "probably due to the policy of expanding during periods of low production." But over-all sales are off, chiefly because of the decline in automotive activity.

One manufacturer of cylinder roller bearings declares that bright spots this year have been in aircraft and agricultural equipment requirements. He estimates that shipments in general will be about 30 per cent below last year's with no appreciable pickup likely in heavy industrial needs before the fourth quarter.

A manufacturer of ball bearings expects a general decline in business this year, with the second half about 15 per cent off the first half pace. Automotive and machine tool requirements are down the most, the company declares; specifications from manufacturers of household durables, such as laundry equipment and vacuum cleaners, are holding up best.

**Export-Market Slow** — Imports present some problems: Foreign manufacturers can take care of their local requirements and are turning to the world market for additional business. Mr. Broden thinks they are more active in other areas than they are in the U. S. He says: "However, we can expect increased pressure due to the world economic situation. Foreign countries need U. S. dollars to support their imports from the U. S. It is vitally necessary for them to export some products to the U. S."

Export business was off in 1957, due mainly to the increased availability of foreign bearings and a lack of money. But trading is still fairly good.

"We cannot compete pricewise with European or Japanese manufac-

turers," Mr. Broden says. "But there are many bearing sizes made in this country which are not manufactured overseas, and demand for them will increase as the export of American machinery increases. Also, we often offer quicker delivery to our overseas customers than they can obtain from foreign competition."

**Trend to Automation** — Among about 70 U. S. antifriction bearing makers (25 to 30 make only ball bearings), there is a move to greater mechanization and automation. Timken Roller Bearing Co., Canton, Ohio, has finished a \$7-million railroad bearing production line at its Columbus, Ohio, plant. It incorporates many automatic features and is capable of producing 20,000 car sets yearly. Company officials say increased efficiency in production has reduced the price per set by more than 50 per cent in the last decade.

**Trend in Materials**—More use is being made of vacuum melted steels and other alloys in bearings for aircraft, missiles, and atomic energy requirements. Bearing manufacturers and steel producers are doing research on high temperature applications. Increased operating temperatures of aircraft powerplants

have necessitated the development of steels which retain their hardness better than the more commonly used bearing alloys under such conditions.

## Growth in Mexico

**Engineer predicts that steel production will nearly double by 1961. Consumption to soar**

MEXICAN steel production hit 700,000 tons in 1957 and will climb to 1,510,000 tons by 1961, predicts Fernando Gonzalez, a metallurgical engineer.

In a report prepared for the Mexican National Chamber of Iron & Steel Industries, Mr. Gonzalez estimated that internal consumption of steel will soar to 1.8 million tons by 1961. Some 290,000 tons will be imported.

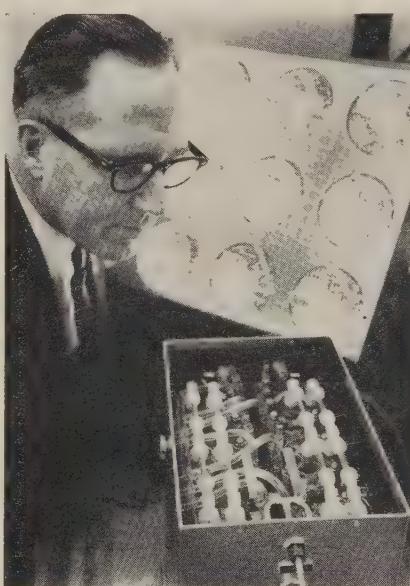
**Steelmaking Facilities** — Apart from Hojalata y Lamina S. A., which operates five electric furnaces, Mexico has 18 other plants which operate 30 electric furnaces with a total capacity of 400,000 tons of liquid steel.

Many of the ovens are used primarily for casting small molded pieces. With small capacity furnaces and high power costs, production costs are topheavy, compared with those of integrated plants. Mexican plants turn out steel ingots for about 700 to 750 pesos (\$56 to \$60) per ton when operating Siemens-Martin high-capacity ovens.

Small furnaces (5 to 10 tons of capacity, using scrap bought at 650 pesos, or \$52 a ton), produce small steel ingots at a cost of 1100 to 1200 pesos (\$88 to \$96) per ton.

Mexico has only five furnaces with normal capacity greater than 10 tons (including the three major ones at Hojalata and Lamina). Twenty have capacities of 2 to 9 tons. The remainder have capacities of 1 ton or less.

**Long Range View**—Mexican steel executives feel that the future for smaller steel operations lies toward decentralization and the establishment of new high capacity plants. Needing heavy financing, the steelmakers are planning a "program for tomorrow" to present to President-elect Adolfo Lopez Mateos who takes office in December.



**A SPECIAL FUEL CELL** will be seen by World's Fair crowds at Brussels, Belgium, combining gases to produce electricity. Exhibited by National Carbon Co., a division of Union Carbide Corp., it uses chemical energy of hydrogen and oxygen. Dr. Clarence E. Larson, research vice president, examines unit

# 18 Often Ignored Ways

YOUR company loses money every time a drop of water escapes from a leaky valve, an unnecessary telegram is sent, or a key man quits his job.

Such items represent a big reservoir of potential savings that can be tapped by many metalworking plants: Fringe areas range from reducing the number of men who attend conventions to trimming inventories of parts. In fact, it's a safe bet there's no area in your operation where money can't be saved.

Of course, the most dramatic savings are obtained by installing new or modified equipment to lower unit production costs (as pointed up by STEEL in its Cost Crisis series). That and the more economical purchase (and use) of materials have received microscopic examination by metalworking management. Fringe areas remain the stepchild of many cost reduction programs.

**Where To Begin**—W. T. Pinney, vice president, Profit Counselors Inc., New York, suggests the best programs start with each department head making a thorough study of his operation. He should ask himself: What needs to be done? What are we doing? What can we eliminate or improve?

The next step is to set down a list of your objectives. Then fix and assign areas of responsibility, set up machinery for co-ordinating the program, and explain to workers what you are trying to do.

Mr. Pinney cites this case: A midwest maker of components with a yearly sales volume of \$3 million was concerned about the cost-price squeeze. Profit Counselors found the company could trim expenses by: Better purchasing, lower shop costs, reduction of shipping costs, elimination of overtime, and product redesign. Result: Savings of \$120,000 yearly.

**What Not To Do**—Don't confuse cost reduction with cost deferrals. Example: Some firms have agreed to fund pension plans over ten years. But there is often no specific yearly amount that has to be set aside. It's reported some are holding off on this year's payment as a means of cutting costs. That's just postponing the inevitable since the amount will have to be made up later.

**Four Don'ts**—Cost consultants generally make these recommendations to clients: 1. Don't cut haphazardly. 2. Don't be afraid to spend money to save. 3. Don't be ashamed to push "nickel and dime" savings—it's estimated a 1 per cent cut in over-all costs can add as much as 10 per cent to net profits. 4. Don't operate your program as a hit-and-run proposition. Cost reduction has to be constant to be successful.

*Here are 18 of the many fringe areas in which metalworking companies are pruning costs:*

**PERSONNEL:** Are you topheavy with unproductive employees? A quick check might show you where duties can be doubled up, functions eliminated.

Charles Hawkins, vice president, Trundle Consultants Inc., Cleveland, offers this advice: "Figure out how many and what kind of men you need. Ask yourself: Have you picked up men you don't need? What functions can be combined? Send your cost reduction group into every area where there is even one man working and look him over. Remember, when you eliminate a man, you save on more than salary."

You also save on items like fringe benefits, office space, furniture, travel, postage, and stationery."

**JOB TURNOVER:** Loss of a productive employee can be costly. Douglas Gould, a Trundle vice president, gives this example: An electrical apparatus firm had a 30 per cent turnover in sales personnel, vs. an industry average of 7 to 8 per cent. A study showed the company was losing around \$5000 every time a salesman quit. In a single year, it cost the company over \$400,000.

# To Cut Costs

Turnover is now down to the industry average and is expected to fall lower. How it was done: 1. Compensation plans of salesmen were revamped. 2. Regional managers are giving salesmen closer supervision. 3. Territories are better balanced to provide more potential. 4. Salesmen have been encouraged to push high profit items.

**TRAFFIC:** Ask yourself these questions: Is your product properly classified so that it falls into the most economical freight rate category? (This is the most important cost saving area in traffic, says Carl Colzani, traffic manager for Federal Pacific Electric Co., Newark, N. J. His firm has run annual shipping savings to \$150,000 over a three-year period.)

Is it necessary to crate your products? Did you know that on shipments West you can use three refrigerator cars for the price of one boxcar? Are you scheduling incoming shipments to hold down demurrage charges? Do you route shipments for greatest economy? (This may mean shipping goods to Los Angeles that are ultimately destined for San Francisco.)

Investigate water transportation, both inland and ocean. You can save from \$1.84 to \$3.94 a hundredweight by shipping via water from the East to the West Coast, says Mr. Colzani. If prompt delivery is not a factor (it takes four to six weeks), that may be your answer.

Rockwell Mfg. Co., Pittsburgh, feels traffic is so important it issues a bi-monthly newsletter to keep personnel informed on latest developments. It contains such information as: 1. Shipments to municipalities are exempt from the transportation tax. 2. Export packing done at the pier rather than the plant will save inland transportation fees on the weight of the crating.

**UTILITIES:** John D. Staley, personnel division manager, American Management Association, New York, says water, electricity, and steam costs can be cut 25 per cent by eliminating waste. One way: "You might try billing utilities to each department and make them responsible for excessive charges."

Another tip from Mr. Staley: "In many instances, the daily electricity charge is based on peak demand. You might stagger the morning startup of equipment to pull down the power de-

mand curve. An alternate solution might be to check with your engineering department about putting in capacitors."

**INSURANCE:** Rockwell Mfg. Co. took a look at this item and decided to combine all functions which were formerly handled at the plant level into a central office. Some results: 1. It reduced the number of policies under the heading "fire and extended coverage" from over 400 to two, with an annual saving of thousands of dollars. 2. By combining all auto insurance on company owned vehicles in a fleet policy, the company is saving \$6000 a year. 3. Rockwell found that because of its low auto accident rate it was cheaper to drop collision insurance.

**MAINTENANCE:** "Important as repair and maintenance costs are today, they will increase as automation takes over jobs now performed by labor," says Thomas Cahill, McKinsey & Co., New York. "But maintenance is only 30 to 50 per cent effective in most plants," adds Mr. Staley.

Says Mr. Cahill: "The two factors that determine maintenance costs are the amount of maintenance and the efficiency with which it is performed. Because the two factors are usually the responsibility of different persons or groups, they must be measured and controlled independently. Such an approach can be effective if: 1. The organization plan is established so that accountability for the amount and efficiency of maintenance can be pinpointed. 2. The amount is controlled by comparing the standard or estimated cost of work performed against the budget. Efficiency is controlled by comparing the standard or estimated cost of work performed against the actual cost of work performed."

**COMMUNICATIONS:** Do you encourage your people to wire instead of phone? Write instead of wire? Can some of your mail be sent other than first class?

An eastern company saved \$100,000 in long distance telephone calls over the past year. Its method: Everyone who talks long distance for more than 3 minutes has to submit a written report to the controller, telling who they talked to, why the call was necessary, and why it took so long.

**DISTRIBUTION:** Are your warehouse locations based on 1940 thinking? Perhaps you should relocate some, com-

bine others, drop a few. Is your product going from factory to consumer in the most economical way?

**MARKETS:** Have you analyzed your markets lately? Some firms have found they're trying to sell to the wrong people. Are you going far afield for business when prospects closer to home are neglected?

**SALES:** Do you have too many salesmen in some areas, not enough in others? Are you making unprofitable sales (better check, many firms have found they are)? Is salesmen's compensation out of line with the profitability of the product? Are salesmen operating at peak efficiency? (Experts say your sales force can probably bring in 10 to 15 per cent more business.)

**ADVERTISING:** Are you promoting products that are high in volume but low in profit? Perhaps you should switch your emphasis to higher profit lines.

**TRAINING PROGRAMS:** Are they really doing what they were set up to do? It might be better to take the man out of the program and put him to work earning money for you.

**RESEARCH:** Ask yourself: Is there a market for the product under study? Is it practical? Shake out wrinkles in lines of communication covering engineering, production, and research.

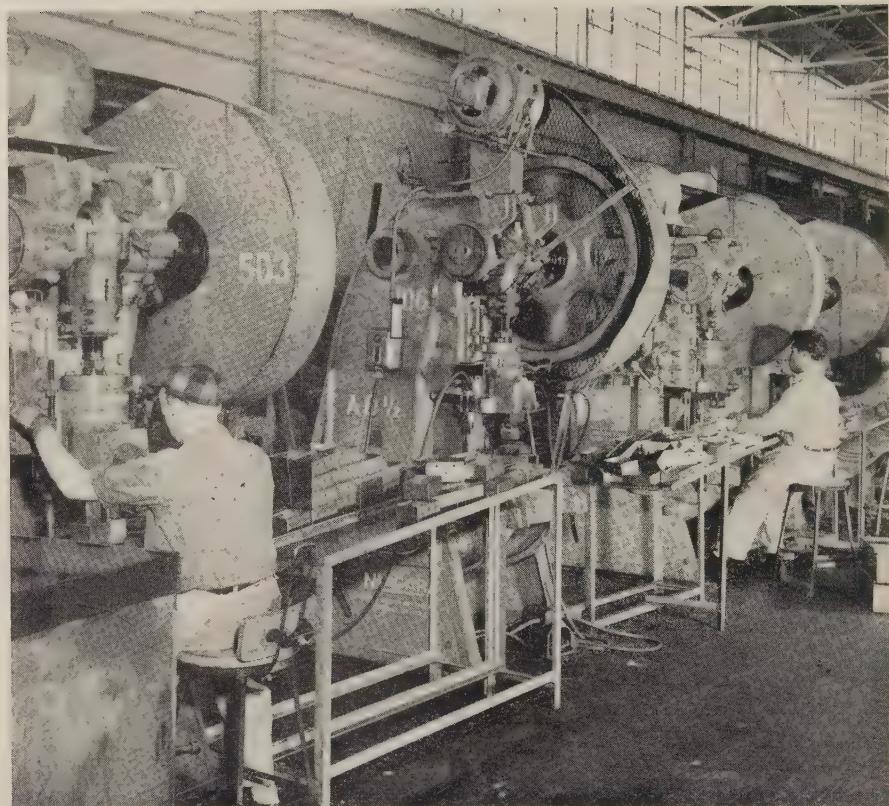
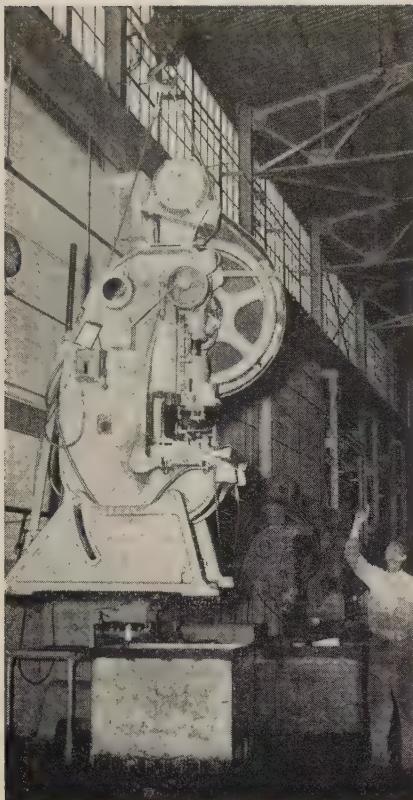
**TAXES:** Are you paying more than you should? Have you removed the cause of possible penalties?

**STANDARDIZATION:** Investigate using only one make of machine in production lines. Possible savings: Greatly reduced inventories of parts, and mechanics become more adept at repairs.

**STORAGE:** Are you having problems of inaccessibility, spoilage by damage, pilferage, dust, and dirt? You might want to investigate modern storage units or air filtration.

**LABOR:** Are you giving in too easily to worker demands that production rates be lowered? That can become expensive, especially if you pay bonuses over a certain quota.

**CREDIT:** Are you letting collections ride? A little tightening of the credit reins may result in substantial savings. If you have to borrow, check to see if interest rates on short and long term loans have changed enough to call for a revision in your banking practices.



Cranes move presses into position at Federal Pacific where . . .

## Machines Are Taken to the Work

JOB SHOP production runs in the pressroom at Federal Pacific Electric Co.'s Newark, N. J., plant are being handled quicker and more economically by taking the machinery to the work.

**Layout**—The pressroom stamps out enclosures for circuit breakers and switches. There's no problem on long runs: Coil steel is sent through a series of four Verson presses (ranging in capacities from 200 to 400 tons) which shear, punch, flatten, castellate, emboss, and bend it to the proper shape by using six-stage progressive dies.

The dies are expensive and setup is long and complex. "For these machines to reach the economic break-even point, continuous production for at least 20 hours (25,000 enclosures) is usually needed," says Bert W. Herzog, assistant plant manager.

**Problem No. 1**—Customers often place orders for special runs of a

few hundred to a few thousand units. It's too expensive to fabricate the small lots on the Versons. The answer, says Federal, is a series of small presses.

**Problem No. 2**—Four small presses usually are needed for the small runs. Because some pieces require but six blows, others as many as 60, it's impossible to set up batteries of anchored presses capable of handling all jobs. Orders had to be broken up and the pieces moved to machines in different parts of the plant. Result: Sharply lowered productivity.

**Federal's Solution**—A mobile operation was devised for such orders whereby required presses can be quickly transported into any area of the pressroom and positioned into a temporary production line that parallels the mass-production line.

**How It's Done**—Machines remain permanently unbolted (the pressroom floor is made of wood blocks

coated with creosote and imbedded in sand to minimize creepage). Presses are placed by overhead crane or fork truck. Setups are made (sometimes before the machine is moved), the units plugged in, and operation gets underway.

Federal's mobile system is simplified by the fact that the pressroom formerly housed a gray iron foundry. Overhead crane facilities were already in place when the company took over. So were floor channels that hold air, water, and electric lines (simplifying positioning of machines).

**Fast Action**—Everything is designed for speed. Eyebolts are affixed to presses at balance points so machines can be readily transported without tilting. Colored markings on each press show the lift truck operator where to position the forks.

When an order comes in, the foreman pulls from the files a

# Reds Make Aluminum War

American producers call for aggressive action as Russian metal upsets world markets. They say the Soviet is boosting exports as an economic tactic aimed at the U. S.

**RUSSIAN ALUMINUM** in the photograph below looks harmless, but to American producers, it's a weapon aimed directly at this country. They say Soviet production, sold in Europe at "unrealistic" prices, depresses the world market. So does the reaction of European producers to offerings at cut-rate prices. American manufacturers say they mean to do something about it.

About 30 per cent of our capacity is idle, domestic makers report. (See Page 170 for more information on U. S. aluminum production.) Six suppliers told the State Department last week: "We should not have to contend with the exploitation of a temporarily unbalanced domestic market by foreign suppliers. They are channeling their surplus products into it, often at subsidized prices." They called for "bold planning and action."

Aluminum production in the remainder of the Free World averages 90 per cent of capacity, pointed out representatives of Aluminum Co. of America, Anaconda Aluminum Co., Kaiser Aluminum & Chemical Corp., Olin Mathieson Chemical Corp., Revere Copper & Brass Inc., and Reynolds Metals Co. To meet the Russian threat, they urged changes in distribution.

They suggested: Channeling surpluses to underdeveloped nations, establishing an international agency for distribution, and antidumping laws. They discussed limiting imports when this country has surplus metal. They favor negotiation with foreign countries to Congressional action.

**Russia's Civilian Weapon** — The decreasing importance of aluminum as a Soviet military metal makes it more dangerous economically. Russia built up its light metal industry for its bomber program. Now the emphasis is on missiles.

Irving Lipkowitz, director of economic research at Reynolds, provides this estimate of Russian output:

1939	.....	55,000 tons
1946	.....	104,000 tons
1957	.....	710,000 tons
1961	.....	1,200,000 tons

In contrast, American capacity is now slightly over 2 million tons.

**Russian Exports Rise** — It's significant, Mr. Lipkowitz points out, that Russia has upset the world market with relatively little export tonnage. Here's a rundown on Russian exports:

1955	.....	13,200 tons
1956	.....	30,600 tons
1957	.....	37,000 tons

"Russian aluminum entered Great Britain at the rate of 2000 tons a month early this year," Mr. Lipkowitz adds. "In a recession, any offer of aluminum below the domestic price exerts pressure. Customers force other producers to meet the lower rates. Russia repeatedly undersells all competition. This is economic warfare, and we can look for it to continue."



This storage yard at a Russian plant holds aluminum pigs. They're a new weapon in USSR's economic arsenal

master plan for the part which tells him: How many blows will be required, how many dies, and how many (and which) machines, how much sheet steel is required, and production rates.

Press operators work in teams. They have reason to work quickly because they're paid group bonuses over certain production quotas. Generally three men operate four machines.

**Advantages** — The company cites these from its mechanized pressroom:

- Extreme flexibility is achieved. A complete production line capable of turning out any item can be set up in less than an hour.
- Large runs don't have to be halted to put through small "rush" orders.
- More usable space is available. Idle machines can be stored outside the pressroom.
- Flow time is reduced and stock kept moving. Says Mr. Herzog: "Company time studies have shown work that would have taken as much as a week to move through a normal job shop operation has passed through the new system in as little as 5 hours."
- Total production is increased by reducing time spent per order.
- Material handling is simplified.
- The incentive system increases per unit productivity.
- There are fewer rejects because operators are held individually responsible for quality.

**Results** — One example of the system's success: A customer recently sent in an order for "immediate delivery" of 1800 special-type fuse panel enclosures. This order could not be filled from stock since Federal normally sells only about 200 per month. By utilizing the mobile setup, the job was done in three days. "Under the old system, pressroom time alone would have been at least three weeks," says Stanley Bogdanski, production control superintendent. He adds: "Time required to process an item from raw steel to finished part can now be measured in hours instead of weeks."

Cost savings have been made all along the line, from increased labor productivity to raising machine output. Two specifics: 1. Material handling costs are down 20 to 25 per cent. 2. Inventory in process has been cut in half.



### Alaskan Economic Survey Coming

RAPID DEVELOPMENT of our 49th state is assured if federal and local government agencies push for quick action. The Alaska International Rail & Highway Commission, Washington, is asking Congress for about \$300,000 to study need for improved transportation facilities in eastern Alaska and western Canada. The commission is also asking for an extension of its life beyond August.

As its name implies, the commission is primarily concerned with feasible rail and highway facilities, but it is also interested in water transportation. Its survey report will cover present facilities, including the Alaskan highway, which is still just a gravel road over most of its Canadian mileage. Excluding feeder routes from port cities, a railroad or rail-highway system from the U. S. to central Alaska could cost about \$500 million. If the commission gets its money from Congress, the report will be in by March, 1960.

A railroad has been talked about for over a century. The latest proposal is from British Columbia: A 750-mile stretch at a cost of \$225 million (in 1955 dollars). Problem: The mineral resources of Alaska will have to be proved sufficient to pay for the project. If so, guesses this source, Alaskan development will come even faster than many optimists hope.

### Six Censuses from Bureau in '59-'60

Starting in January, the Census Bureau will provide new statistics on population, housing, farming, factories, mines, trade, and services (STEEL, June 16, p. 58). Besides being new marketing data for business researchers, this work will be the basis for the reapportionment of membership in the House for the Congress to be elected in 1962.

These states probably will gain: Arizona—1; California—7; Florida—3; Indiana—1; Maryland—1; Michigan—2; Ohio—2; Oregon—1.

Arkansas, Massachusetts, and Pennsylvania will lose two seats each; Alabama, Georgia, Illinois, Iowa, Kansas, Maine, Minnesota, Mississippi, North Carolina, Oklahoma, Virginia, and West Virginia will lose one seat each.

### Space Vehicles Powered by the Sun?

The Air Research & Development Command reports "significant progress" in developing sun-powered generators for the operation of space vehicles. ARDC has two generator cells capable of producing 8 volts of current each; research is being done by Harshaw Chemical Co., Cleveland, and Eagle-Picher Co., Miami, Okla.

Though we are far from eliminating the need for carrying fuel aboard space vehicles, ARDC expects the next step to give us enough solar energy to power the electronic equipment of a space ship. More efficient generators will be developed soon by combining zinc sulfide with cadmium sulfide crystals.

### Minuteman Contract Will Be Let Soon

Behind the scenes in Washington, Detroit, and several of the country's aircraft centers, the biggest missile deal to date is taking shape. General Motors Corp. wants the complete contract for the Minuteman (solid-fueled ICBM). Many aircraft and electronic firms are bidding against GM for particular parts of the program. (Eventually, it will involve billions of dollars.)

The decision on who will get the contract is rough for the Pentagon because airframe firms are worried about letting such a tremendous order get away. The word in Washington is that the automotive companies have been bidding on big missile projects for the last three years, although Chrysler Corp.'s Redstone-Jupiter project and GM's guidance work are the only big plums to fall in Detroit. The Air Force philosophy of maintaining a healthy airframe industry has worked against autodom several times.

Now, with most of the airframe makers in fairly good shape, it is logical, some say, to let GM tackle the big one. Enough subcontracting would go from GM to airframe firms to keep them happy, yet no single airframe company would get this program to the detriment of the others. A side issue: If GM gets the Minuteman, it would be easier to explain to Michigan congressmen why the Jupiter program may be canceled in favor of the Thor.

### Ways & Means O.K.'s Small Business Aid

Small firms will get \$250 million worth of tax relief annually if a House Ways & Means Committee bill gets through Congress. Depreciation allowances make up \$175 million of the program: In one year, small companies could deduct 20 per cent of the cost of machinery up to \$10,000 from their tax bills. Normal depreciation methods will be allowed for the other 80 per cent of their annual investments in new equipment. Applicable to new or used equipment with a useful life of six years or more (Bulletin F), it does not apply to buildings but is retroactive to purchases of equipment made since Dec. 31, 1957.

Other provisions of the bill: 1. Net operating losses can be carried back into three preceding tax years to gain tax refunds. 2. Stock losses (up to \$25,000 a year) may be treated as ordinary rather than capital losses. 3. Estate taxes can be spread over ten years. Outlook for passage: Almost a sure thing.

*Morgan Quality in Action*



# MORGAN WORCESTER

## **30"-21" BILLET MILL**

#### **with No. 5 Electric Flying Shear in Action**

Every Morgan Mill is developed by highly skilled technical engineers to answer the exacting demands of mass production. Morgan introduced the first successful continuous rolling mill in this country—and has consistently maintained leadership in producing quality, high production mills in this country and abroad.

# MORGAN CONSTRUCTION CO.

## **WORCESTER, MASSACHUSETTS**

ROLLING MILLS MORGOL BEARINGS GAS PRODUCERS  
WIRE MILLS EJECTORS REGENERATIVE FURNACE CONTROL

# Star studded with economy features

## Cutler-Hammer Three-Star Unitrol



### Standardized Modular Construction

All control units are 20" wide and in multiples of 14" in height. This permits easy interchange of various sizes and types of control units without rearrangement of the entire control assembly and avoids wasting space with dead panels to adapt non-uniform control units. This standardized modular construction also insures good appearance at all times because horizontal lines match.

No industrial today can afford to ignore the savings Unitrol now offers in the installation and use of motor control

Cutler-Hammer Unitrol cuts costs from the moment it is delivered. It can save days, often weeks, in the time required for the installation of motor control. The high cost of mounting and wiring individual starters is eliminated. Earlier use of the production facilities brings a speedier return on the investment. Unitrol often effects vital savings in floor space, sometimes avoids the need for costly plant construction.

In performance, nothing can compare with the Unitrol. Feature after feature of the astounding Three-Star Control saves time and expense. Superlife vertical contacts *never* require maintenance care in all normal use. Adjustable overload relay coils let motors work harder safely, save the expense of both damaged motors and needless production interruptions. Full three-phase protection such as able engineers now demand is offered by three-coil overload relays.

Compare Unitrol with any other control centers and see the difference. See how sizes and types of control units can be interchanged in Unitrol without rearrangement of the entire assembly or the waste of space with dead panels. Saves time, saves space, saves money. Compare and you *too* will insist on Cutler-Hammer Three-Star Unitrol. Write or wire now for full information. CUTLER-HAMMER Inc., 1211 St. Paul Avenue, Milwaukee 1, Wisconsin.



Unitrol plug-in feature disconnects control from power when unit is moved to test position, reconnects without misalignment when unit returns to operating position. Control panel is *always* vertical. Plug-in design permits back-to-back assemblies without staggering control units. Units are removed by merely disconnecting load and control wiring at terminal boards. This wiring is cabled, marked and color coded.



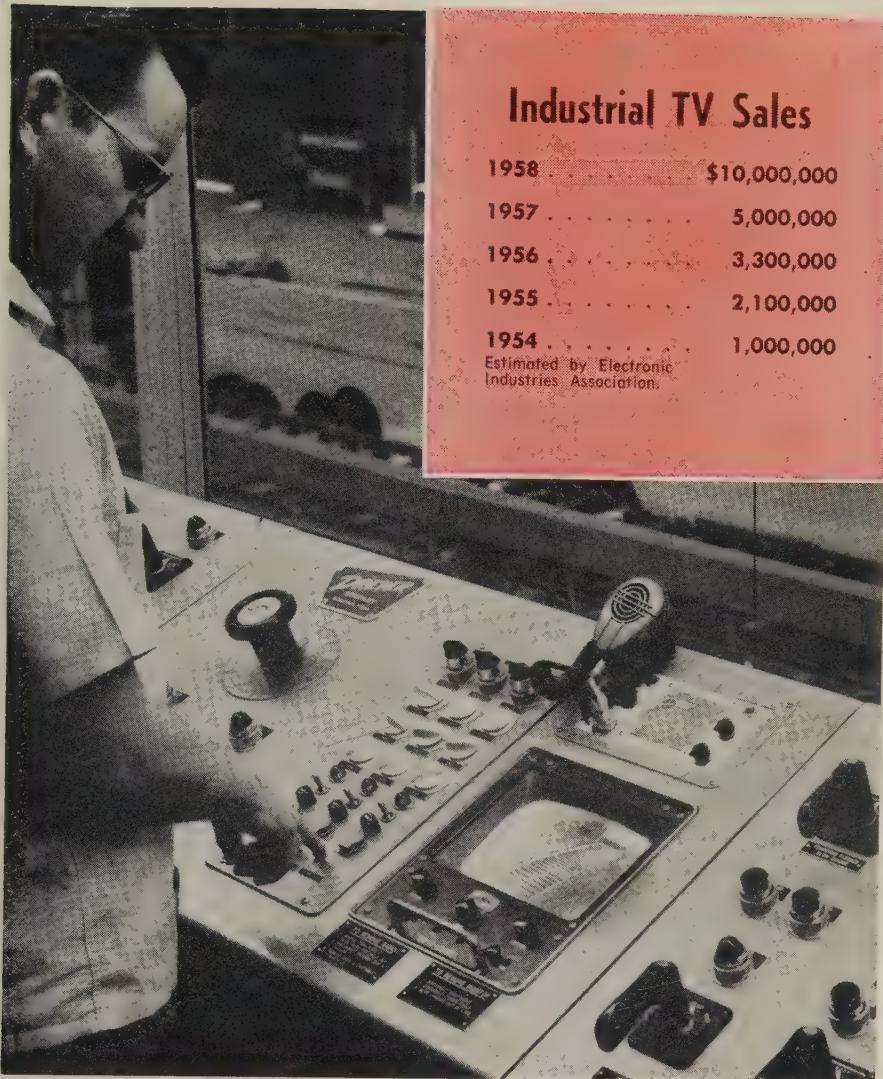
Unitrol provides either circuit breakers or fused disconnect switches of advanced design. Both have three-position self-aligning operators arranged for padlocking with as many as three locks in the "off" position. Recessed pushbuttons and concealed door hinges are typical features that add to safety and fine appearance.



Components front of panel mounted without stacking. No crowding, no power connections near panel fasteners. Many Three-Star Control exclusives. Superlife vertical contacts *never* require maintenance expense in all normal control uses. Adjustable overload relay coils let motors work harder with safety. Full Three-Phase Protection with 3-Coil overload relays on standard size starter panels.

The name UNITROL is a  
Cutler-Hammer trade mark

**Cutler-Hammer Inc., Milwaukee, Wis. Division: Airborne Instruments Laboratory. Foreign: Cutler-Hammer International, C. A.**  
**Associates:** Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation, Inc.



Allen B. Du Mont Laboratories Inc.

**A Texas steel plant keeps tabs on operations by using . . .**

## Industry's Electronic Eye

SALES this year of closed circuit television for industrial purposes will nearly double 1957's, estimates the Electronic Industries Association, Washington (see table).

About 15 U. S. firms manufacture complete systems and equipment and about 15 more make components and accessories.

**Makers Are Optimistic** — Producers of closed circuit systems are enthusiastic about the future. Example: Radio Corp. of America, Camden, N. J., says the device can keep 24-hour watch over many industrial operations and in so doing promote safety and save time,

money, and effort. The firm expects sales in 1958 to show a "substantial" increase over last year's.

Allen B. Du Mont Laboratories Inc., Clifton, N. J., describes future sales prospects as "overwhelming." General Electric Co., Schenectady, N. Y., says sales prospects are steadily improving and that closed circuit TV is becoming more and more accepted by industry.

Sales prospects promise steady growth, reports Dage Television Div., Thompson Products Inc., Michigan City, Ind. Blonder-Tongue Laboratories Inc., Newark, N. J., thinks 1958 will be one of the in-

dustry's biggest years. It claims TV equipment is being purchased as matter of factly as milling machines. Sharing the optimistic outlook, General Precision Laboratory Inc., Pleasantville, N. Y., observes that industrial sales account for about 50 per cent of the total TV market.

**Some Uses**—Closed circuit systems are installed in areas inaccessible to humans (such as danger zones, enclosed chambers, or areas hard to see from control positions). It helps in controlling operations and is proving useful in quality control.

Douglas Aircraft Co. Inc. uses closed circuit television in conjunction with a riveting machine at its El Segundo Div. The machine installs the H and Z section stringers to the A2D Skywarrior wing panels. Even though the operation is automatic, a close watch is needed to insure against damage to the drill, countersink, rivet sets, or rivet head milling cutter. By observing operations via TV, the operator can (by using pushbutton control) stop the machine quickly when necessary.

Sharon Steel Corp. uses it in its new \$14 million slabbing and blooming mill at Farrell, Pa. Equipment has been installed at critical points to help operators maintain quality control by providing them with a closer look at key rolling and handling operations.

At Fairless Works of U. S. Steel Corp., closed circuit TV watches operations in the open hearth furnace. The camera, air and water cooled, can be aimed over the entire surface of the bath revealing any unevenness in melting. Object: The flame can be directed where needed most.

**How It Began**—Closed circuit TV reportedly was first used in government laboratories as an aid in handling radioactive materials. Today, it has a long list of applications.

In metalworking alone, applications increase as special needs develop and engineers adapt and devise equipment to provide solutions. Some uses: Reading gages, watching machine operations, monitoring load levels in bins and tanks, checking furnace burners and stacks, scanning material handling, making time study checks, making security checks at gates, speeding interplant and intraplant communications, transmitting drawings and photos.

For steelmaking, television can help control sintering, open hearth

bath and flame, and rolling mill operations.

**Makeup of System**—A basic system consists of a camera, coaxial cable, generator and monitor. The simplest cost from \$1400 to \$3000. Prices naturally increase with accessories (such as additional cameras and special lighting). Additions which can be made without obsoleting original equipment might include multiple lenses, remote control for panning, tilting, lens changing, iris settings, and focusing.

Although prospective users of closed circuit television often have men on their payrolls qualified to make the installations, the usual approach is through manufacturers of industrial TV or their authorized representatives. Installation or maintenance is made according to the user's wishes.

**Innovations**—The past year has brought some significant improvements in equipment. Worth noting are cameras that automatically adjust to light levels; cameras with built-in control units; more rugged cameras for operation in extreme environments; more reliable system components and a wider range of accessories. Also reported are successful experiments which indicate the feasibility of transmitting images over telephone circuits.

## May Steel Payroll Up

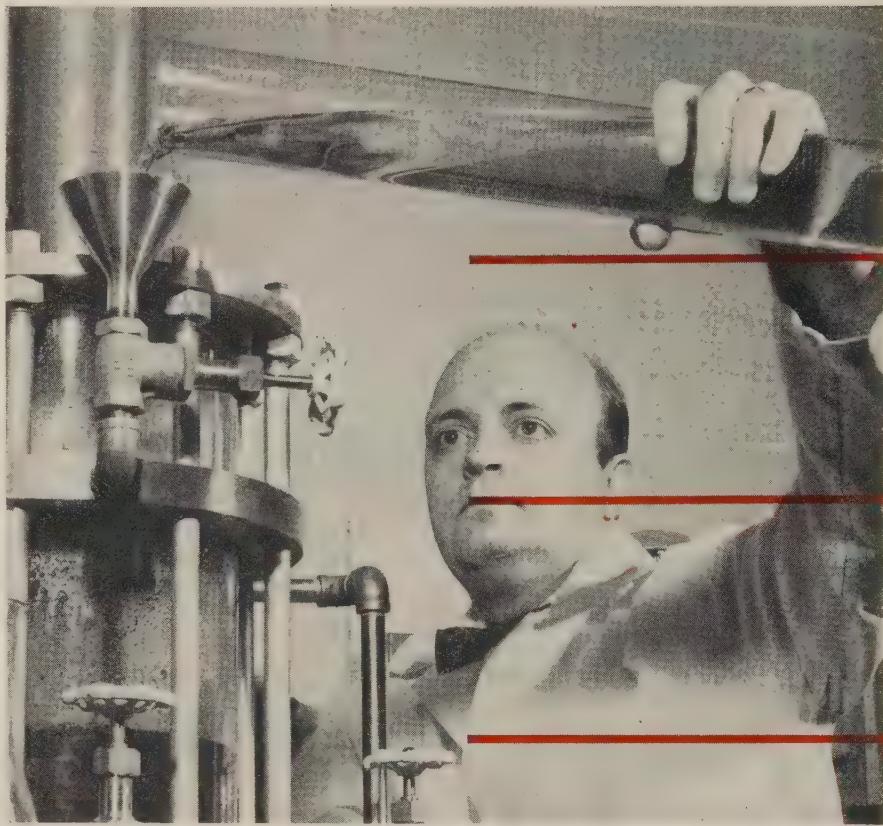
The May payroll for 94.9 per cent of the steelmaking industry was about 4.2 per cent higher than April's (\$258 million, against \$247.5 million) but was about 20 per cent under that in May of last year (\$322 million), reports the American Iron & Steel Institute.

The average hourly payroll for steelmaking employees in May (representing the same 94.9 per cent) was \$3.09 an hour, compared with \$3.10 in April and \$2.82 in May of 1957. Total employment of the reporting companies was 500,369, compared with 502,653 reported in April.

The steel industry's wage earners worked an average of 34.2 hours a week in May, against 33.1 in April.

The May payroll for the entire iron and steel industry was \$270 million for 526,700 workers, the institute estimates.

# Recession Spurring R&D



**Survey indicates metalworking's outlays in 1958 are greater than 1957's. Behind the boost: A quest for new products to combat the slump. Basic researchwork drops**

AMBLE through Armour Research Foundation's 350,000 sq ft of laboratories in Chicago. You'll find 1300 scientists, engineers, and staff people working on more than 750 research projects—about 3 per cent more than at this time last year.

Then tour the Matawan, N. J., labs of Hanson-Van Winkle-Munning Co. You'll find a reorganized and expanded technical staff searching for ways to make plating and polishing equipment that will lower unit production costs. The company doubled its R&D spending this year.

Those examples emphasize the role of research and development in metalworking's bid for better profits.

**They're Not Alone**—Of 100 leading companies checked by STEEL, 91 are spending as much or more for

R&D this year than last. They're doing it to maintain (or improve) their competitive positions. To sell in today's market, they say, you have to tailor your product more to the customer's liking. Many report pressure from salesmen for more, new, different, and easy-to-sell items.

Also prodding the R&D budget upward is the desire to lower production costs as keen price competition forces selling prices down. Process improvement heads many companies' lists of target areas.

With some, high 1958 R&D expenditures reflect a continuation of projects started earlier. Because they show promise of widening next year's profit margin, the companies overrule postponement that would bring only short term savings.

# Programs:

30%  
are spending MORE

61%  
are spending SAME

9%  
are spending LESS

in 1958 vs. 1957

A few firms say they're pushing development in fields new to them. Their objective: Broaden product lines. Some are just beginning to move into the missile and nuclear fields. Others, like Alloy Steel Products Co., Linden, N. J., are developing components in anticipation of nuclear energy's breakthrough into commercial usage. More than half the nation's R&D is done by or for military agencies.

One company says its higher R&D spending "isn't entirely intentional." Reduced production volume freed engineers to explore ideas previously shelved. It has also transferred some production men to assembly of experimental models of new products.

**Where Money's Going**—Development, not research, is getting the most attention. Metalworking's prime targets:

- New product development.
- Improved product design (for cheaper production, longer life, easier use, more sales appeal).

- Process improvement.
- Materials—upgrading them.
- Tooling—lower its cost.
- Production facilities—up their efficiency.
- Waste products—make them useful.

**Some Curtail**—Nine respondents are cutting back their R&D spending. Reason: "We can't afford it." Kenneth Bartlett, president, Horizons Inc., Cleveland research organization, offers this explanation: "A manager is measured by the return on investment or profit per sales dollar his company makes. So during poor income periods, he'll cut back R&D spending to maintain a profit margin."

He adds: "R&D carries this obligation: If it's successful, the resultant new product or process should be exploited immediately. That often means investing in new capital equipment—an item some companies can't afford right now."

**Brighter than Most**—Armour's huge workload probably isn't typical of independent labs' current activity; some find their volume diminishing. Reasons: 1. Development, not research (the labs' prime work area), is industry's present target. 2. Companies are doing more of their own R&D. That's because lower production frees engineers from routine jobs to work on development.

**The Big Push**—Metalworking's spending for research and development nearly doubled from 1953 to 1956 (when it hit \$4 billion), indicates National Science Foundation. The aircraft industry led the march. Primary metal producers hiked their outlays from \$59.8 million to \$87.9 million. Metalworking's 1958 outlays are estimated at \$6 billion, vs. \$5 billion last year.

Example of continuing R&D effort: Monsanto Chemical Co.'s total employment climbed 28.5 per cent in the last five years; the number of research personnel jumped 49.5 per cent. The St. Louis company is pouring \$23.8 million into research this year, vs. \$22.7 million last year.

**Machine Control Is Hot**—Hughes Aircraft Co., Los Angeles, boosted R&D spending 15 per cent this year. It's doing applied research on numerical control for machine tool transfer lines and single special

machines (see STEEL, Mar. 31, p. 84).

Cross Co., Detroit, hiked its R&D budget 75 per cent this year (reflecting comparatively low 1957 spending but signaling a large '58 program). The company is developing static-element control systems for machine tools. They would replace mechanical switches, eliminating moving parts in the control panel. Static controls reduce machine downtime, offer great reliability, and have long working lives.

**New Materials**—Crucible Steel Co. of America's R&D spending is up 50 per cent this year reflecting work at its now wholly owned subsidiary—formerly Rem-Cru Titanium Inc. Tangible research results: Three new titanium alloys. Tagged "Formageable," they can be formed easily while in a solution treated condition, then thermally aged to high strength—one, a beta phase alloy, to a yield strength of 220,000 psi (see STEEL, July 14, p. 116).

## Billions for Research

Interested in a \$2.8-billion opportunity?

The Small Business Administration, Washington, says the federal government spent that sum for research and development in the 12 months ended June 30, 1958.

The Defense Department offers greatest possibilities for research contracts, says SBA. It adds: "Small firms interested in research work for the government should make their abilities known."

## New Plant Upgrades Ore

The trend to greater supply of processed ores is gaining momentum. Steep Rock Iron Mines Ltd. reports it will supply ore containing 58 per cent iron and 6 per cent silica from a new \$2,250,000 plant at Steep Rock, Ont.

The facility serves an underground mine at Errington, Ont. It will take in as much as 7000 tons of crude feed daily, including large tonnages previously discarded as waste. Capacity will be 5500 tons of improved ore a day.

A second plant, to serve the Hogarth, Ont., mine, will probably be operating in 1959.

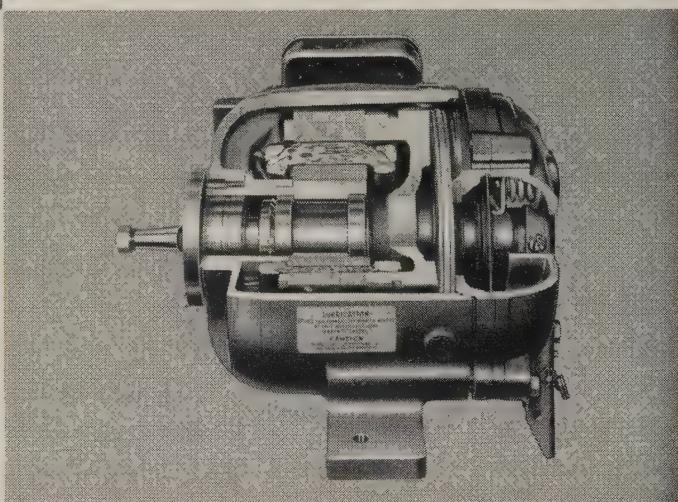


## THE **HIGHER** THE SPEED...

the more you need HYATTS . . . because their internal clearances are stringently controlled for smoother operation. Built of the finest steels, HYATT Hy-Rolls operate with peak efficiency at high speeds as in this non-ventilated, continuous-duty textile loom motor.

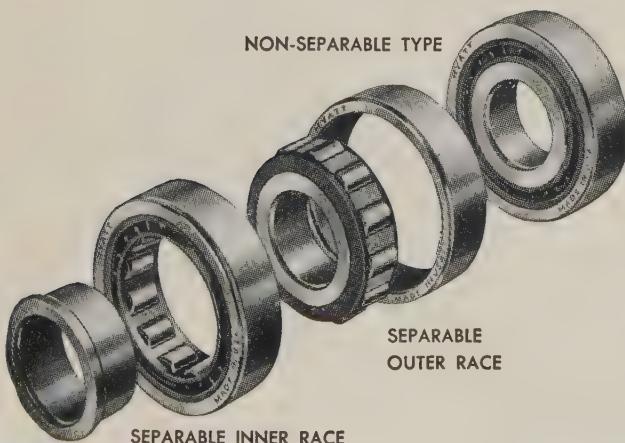
## THE **HEAVIER** THE LOAD...

the more you need HYATTS . . . because nothing can compare with the cylindrical roller bearing for rugged, load-carrying capacity and continuous operation under adverse conditions. That's why leading steel mills specify HYATT Hy-Rolls for applications like these charging cars.



*Cylindrical*

THE MORE YOU NEED  **HY-ROLL BEARINGS**



Today, as new industrial designs require heavier loads and higher speeds crammed into smaller housings, engineers are turning to HYATT Roller Bearings, America's most complete line of cylindrical roller bearings. They find their problems are solved quickly with bearings like the shouldered-race HYATT Hy-Roll that will handle heavy radial loads while taking a surprising amount of thrust. Contact your nearest HYATT Sales Engineer for recommendations—You'll find him a mighty big help! Hyatt Bearings Division, General Motors Corporation, Harrison, N.J.; Pittsburgh; Detroit; Chicago; Oakland, California.

THE RECOGNIZED **LEADER** IN CYLINDRICAL BEARINGS

**HYATT** **HY-ROLL BEARINGS**  
FOR MODERN INDUSTRY





## Body by Fisher

If you're a potential supplier to General Motors' body division, here are tips on how to get the business. The Fisher operation, taken over by GM in 1926, is unique

GEORGE COOK, director of purchases for General Motors' Fisher Body Div., doesn't think there's anything unusual about his organization, but to its 7000 or more suppliers, it is unique.

It has full responsibility for purchasing or producing all components and varied materials that go into the bodies of GM cars. Its body assembly plants are usually adjacent to car division assembly plants; in many cases they're actually in the same building. But until the finished body rolls into the car division section of the plant, it's owned by Fisher Body.

**Fisher's Role** — Mr. Cook finds many suppliers still don't know

where Fisher Body fits into the GM picture. "We got a letter the other day addressed to Mr. Wolfram (Oldsmobile's general manager). The writer said he had noticed that the headlining in his new Olds was a rubber material similar to that made by his company. He wondered if Mr. Wolfram would be interested in buying his product.

"That letter was written almost a month earlier and by the time it was rerouted through GM's procurement and scheduling group to us, the prospective supplier had wasted a lot of time and effort," says Mr. Cook.

**Dear Sir** — That isn't unusual.

Many suppliers are vague about who buys what in the GM hierarchy. The tendency is to address a letter to the head of a division and hope that it will get to the proper source. Mr. Cook recalls one letter that said simply: "I have machinery and manpower. I'd like to manufacture something for your company."

**History** — Fisher Body was formed in 1908 by Fred and Charles Fisher. They started building wagon and carriage bodies and switched to selling automobile bodies to Cadillac in 1910. The firm pioneered in the mass production of closed bodies. General Motors bought a three-fifth interest in Fisher in 1919, and it joined GM officially in 1926.

Today, Fisher Body operates 11 stamping plants, 16 assembly plants, and four tooling, engineering, and research facilities. Two more plants fabricate upholstery trim (some of the assembly plants also do this work).

**Nomenclature** — To persons unfamiliar with the auto industry, the body is everything from the

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firewall and front windshield opening back to, and including, the rear bumper. Basically, the term covers the passenger seating package but does not include the hood, fenders, chassis, and drive train.

Sometimes, purchasing requirements reach such a fine point that side trim strips on Buicks or Chevrolets, for example, are bought by Fisher Body and put on the body right up to the edge of the front door. The additional 6 or 8 in. of trim spear on the front fender is installed by the car division with Fisher Body's approval.

**Starting Point**—Although its engineers sit in on preliminary GM styling and design confabs, the body division begins work when full-sized clay mockups come from central styling groups. Production designs evolve from the mockups, and prototype development gets underway. At the same time, body division engineers are deciding what materials to use and where to purchase them. Other engineers and toolmakers start building body dies.

It's a big responsibility from a purchasing standpoint because Fisher Body builds almost 80 different body styles each year. Each style has about 4000 parts which require special testing and attention. By making a single division responsible for all this work, GM obtains manufacturing economies and saves money in its buying.

**Tons & Tons**—Moving in and out of Fisher Body plants in an average year are: 1.5 million tons of steel, 261 million lb of glass, 3 million lb of aluminum, 87 million lb of rubber, 3 million lb of copper, 69 million lb of lead and zinc alloys, plus many pounds of fabrics, leather, and other materials.

If you want to sell to GM and don't know where to go, take Mr. Cook's advice. Write to Ray Vogel, who heads up GM's Procurement & Scheduling Div., General Motors Bldg., Detroit 2, Mich. Mr. Vogel's group will get your letter to the proper source in a few days. Letters addressed to GM's president, Harlow Curtice, will be a long time finding a purchasing agent's desk.

## U. S. Auto Output

Passenger Only

	1958	1957
January .....	489,357	642,090
February .....	392,112	571,098
March .....	357,049	578,826
April .....	316,503	549,239
May .....	349,474	531,365
June .....	337,355	500,271
6 Mo. Total	2,240,850	3,372,889
July .....	495,629	
August .....	524,354	
September .....	284,265	
October .....	327,362	
November .....	578,601	
December .....	534,714	
Total .....	6,117,814	
Week Ended	1958	1957
June 14 .....	78,163	125,372
June 21 .....	84,396	118,805
June 28 .....	92,277	125,909
July 5 .....	35,273	73,682
July 12 .....	73,846†	111,943
July 19 .....	80,000*	117,205

Source: *Ward's Automotive Reports.*  
†Preliminary. \*Estimated by STEEL.

tors still seem to be trying to justify building an American economy type car.

Detroit isn't sure that the apparently growing market for European imports means people will buy U. S.-built economy cars. But the industry is coming to believe that the

## Foreign Car Registrations

(First five months)

	1958	1957
Volkswagen	33,866	26,556
Renault	14,231	5,288
British Ford	10,866	4,414
Hillman	6,335	*
Fiat	5,887	*
MG	*	5,318
Metropolitan	*	4,056
All Others	56,904	21,060
<b>Totals</b>	<b>128,089</b>	<b>66,692</b>
Share of U. S. market	6.3%	2.7%

\*Not in top five.  
Adapted from R. L. Polk & Co. data.

## Role of the Small Car

With small car tooling already underway, Ford and General Mo-

upgrading of Ford, Chevrolet, and Plymouth has created three new market groupings in which the small car will have a definite place.

One of the industry's market research men told STEEL his concept of the regrouping. It justifies small car production in this country.

**Upgraded**—“First we have the luxury car market which is fairly stable. The second group is the medium price market, and let's face it, this now includes top-priced Fords, Chevrolets, and Plymouths because they cost more than economy buyers want to pay,” he asserts.

The researcher thinks it is unlikely that economy buyers will become so hard pressed they'll want a cheap version of those three cars. That opens up a market for an economy car which is being filled by AMC's Rambler, S-P's Scotsman, and the imported jobs.

**Furriners**—In that market are a smaller number of persons who aren't as interested in economy as they are in foreign flavor. “Right now that group probably accounts for a third of the 300,000 foreign cars that will be sold here this year. Foreign appeal is a secondary consideration for most of the others,” says the marketeer.

As the population expands and inflation continues to boost car prices, he thinks a greater percentage of car buyers will want an economy car, but the percentage of those who want a foreign car should remain pretty constant.

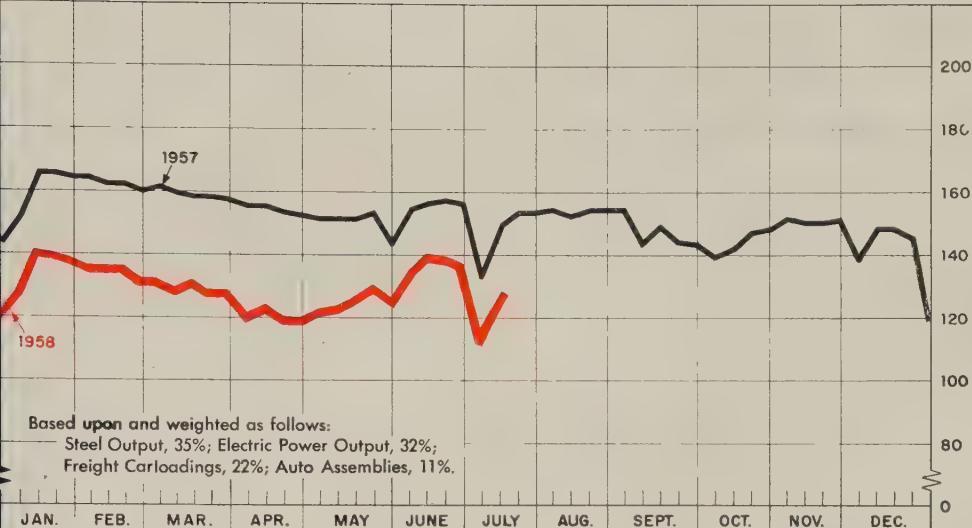
**Outlook**—“This means the economy (not small) car market can support a million sales by 1962-63 and most of them will be American type cars. Even with high domestic manufacturing costs, it should be a profitable venture for at least Ford and GM, even though they may lose money at first if they introduce the cars next year or even in 1960,” he adds.

The hitch (apparently the one thing that's keeping GM from admitting it will introduce the car here) is a lack of complete proof that such reasoning is valid. “We believe this is what's happening, but this blasted small car market is still too new for us to get any real proof yet. We hope our market studies and this year's import sales will give us the data we need,” concludes the researcher.

**STEEL**  
**INDUSTRIAL PRODUCTION**  
**INDEX**

(1947-1949=100)

LATEST WEEK	127*
PREVIOUS WEEK	115
MONTH AGO	139
YEAR AGO	150



\*Week ended July 12.

## Summer Level To Be Above Recession Low

INDUSTRIAL PRODUCTION looks like it is going to ride out the rest of the summer a little above the halfway point between the year's high and low readings on STEEL's index. The index made up more than half the ground it lost during the Fourth of July holiday week. A preliminary 127 (1947-49 = 100) was posted during the week ended July 12 despite some fairly strong obstacles.

Auto production showed the effects of early model changeovers, and freight carloadings were weak because of the coal miners' holiday which began on June 28.

**Outlook**—Steel production is rising slowly. Last week the mills were scheduled at about 55.5 per cent of capacity, good for 1.5 million tons of steel for ingots and castings. That's almost 60,000 tons better than the previous week's production and will add more than a point to the index.

Output of electric energy is beginning to expand as the weather comes closer to seasonal normals. The indicator probably will fall short of the year-ago weekly totals this summer because of extended vacation periods in industry, but it will still be one of the strongest factors in industrial production.

**Rail Outlook Dismal**—Through the week ended July 5, cumulative railroad carloadings were almost 20

per cent behind the year-ago figure. The situation will not get much better before fall, largely because of the reduction in iron ore and coal loadings. But the resumption of shipping of coal following the miners' holiday will add strength to the index for the week ended July 19.

Despite an expected pickup in

auto output following the July 4 shutdowns, the immediate future of the industry is cloudy. Assemblies of cars and trucks totaled about 89,000 units during the July 12 week, says Ward's Automotive Reports, and the figure probably rose slightly last week. There were no phaseouts scheduled, and some

### BAROMETERS OF BUSINESS

#### INDUSTRY

Industry	Latest Period*	Prior Week	Year Ago
Steel Ingot Production (1000 net tons) <sup>2</sup>	1,515 <sup>1</sup>	1,442	2,030
Electric Power Distributed (million kw-hr)	11,800 <sup>1</sup>	11,150	11,964
Bituminous Coal Output (1000 tons)	1,250 <sup>1</sup>	8,930	1,474
Crude Oil Production (daily avg—1000 bbl)	6,400 <sup>1</sup>	6,427	6,882
Construction Volume (ENR—millions)	\$559.0	\$466.3	\$325.5
Auto, Truck Output, U. S., Canada (Ward's)	98,040 <sup>1</sup>	46,206	143,699

#### TRADE

Trade	Latest Period*	Prior Week	Year Ago
Freight Carloadings (1000 cars)	525 <sup>1</sup>	458	692
Business Failures (Dun & Bradstreet)	292	335	190
Currency in Circulation (millions) <sup>3</sup>	\$31,384	\$30,975	\$31,313
Dept. Store Sales (changes from year ago) <sup>3</sup>	+1%	-9%	+4%

#### FINANCE

Finance	Latest Period*	Prior Week	Year Ago
Bank Clearings (Dun & Bradstreet, millions)	\$18,815	\$26,110	\$17,299
Federal Gross Debt (billions)	\$276.0	\$276.3	\$272.9
Bond Volume, NYSE (millions)	\$23.8	\$25.1	\$20.8
Stocks Sales, NYSE (thousands of shares)	12,510	13,334	13,246
Loans and Investments (billions) <sup>4</sup>	\$95.3	\$96.0	\$88.2
U. S. Govt. Obligations Held (billions) <sup>4</sup>	\$32.6	\$32.4	\$26.3

#### PRICES

Prices	Latest Period*	Prior Week	Year Ago
STEEL's Finished Steel Price Index <sup>5</sup>	239.15	239.15	239.15
STEEL's Nonferrous Metal Price Index <sup>6</sup>	195.9	196.0	216.6
All Commodities <sup>7</sup>	119.1	119.2	117.7
Commodities Other than Farm & Foods <sup>7</sup>	125.5	125.3	125.4

\*Dates on request. <sup>1</sup>Preliminary. <sup>2</sup>Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. <sup>3</sup>Federal Reserve Board. <sup>4</sup>Member banks, Federal Reserve System. <sup>5</sup>1935-39=100. <sup>6</sup>1936-39=100. <sup>7</sup>Bureau of Labor Statistics Index, 1947-49=100.

## Testimonial:



## Translation:

### \*FISCHER'S REPUTATION FOR "SPECIALS" IS UNIVERSAL!

We really don't sell brass and aluminum turned nuts in "outer space" . . . but that's the only territory we can't supply! Manufacturers of all types of equipment are realizing substantial cost savings with dependable Fischer "special" nuts. Reason: FISCHER NUTS HAVE NO EQUAL FOR PRECISION, PRICE AND DELIVERY. And that applies to standards as well as specials!

If you use brass or aluminum nuts in production quantities, specify the finest . . . specify FISCHER!

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for precision  
at

**Fischer**  
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476 Morgan St., Cincinnati 6, Ohio

Please send your new 20-page CATALOG FS-1000 containing complete specifications on brass and aluminum nuts.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

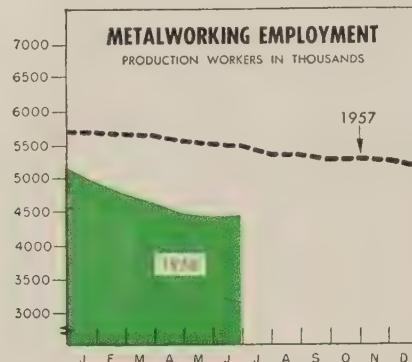
Street \_\_\_\_\_

City \_\_\_\_\_

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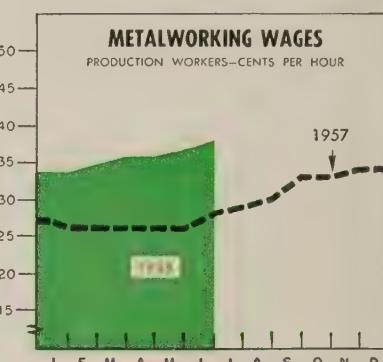
8050-FS

## THE BUSINESS TREND



	Prim.	Fab.	Mach-	Elec.	Trans.
1957 Mths.	Prod.	Inery	Mehy.	Equip.	
June	1,095	893	1,274	852	1,404
July	1,075	869	1,207	848	1,373
Aug.	1,077	878	1,180	861	1,363
Sept.	1,061	878	1,186	879	1,278
Oct.	1,049	889	1,186	869	1,321
Nov.	1,029	887	1,141	852	1,350
Dec.	1,006	868	1,122	824	1,342
1958					
Jan.	957	833	1,097	792	1,276
Feb.	911	800	1,072	765	1,214
Mar.	885	786	1,090	749	1,153
Apr.	848	766	1,061	729	1,103
May*	843	757	1,030	717	1,077
June*	854	767	1,010	726	1,071

\*Preliminary.  
U. S. Bureau of Labor Statistics.  
Charts copyright, 1958, STEEL.



	Prim.	Fab.	Mach-	Elec.	Trans.
1957 Mths.	Prod.	Inery	Mehy.	Equip.	
June	247	218	230	206	240
July	252	218	230	205	241
Aug.	253	219	230	205	242
Sept.	256	222	232	207	246
Oct.	255	222	233	208	247
Nov.	255	223	234	210	250
Dec.	255	221	234	211	248
1958					
Jan.	256	222	234	212	246
Feb.	256	222	235	214	246
Mar.	257	223	236	214	248
Apr.	257	224	236	214	247
May	258	225	237	214	250
June*	259	226	237	215	251

\*Preliminary.  
U. S. Bureau of Labor Statistics.

plants idled for an extra week after the Fourth were back in operation. But at least two makers (Chrysler and Dodge) will close out 1958 model runs this week, and output will decline steadily after that until 1959 production gets up steam in September and October.

The balance sheet indicates that STEEL's index will do well to move above 130 points in July. The August level will depend on the relative strength and weakness of steel operations and auto production. It will probably be late September or early October before the 1958 peak of 139 is surpassed.

### Employment To Stay Level

Little change is expected in the employment picture following the improvement reported for June by the Department of Labor. Seasonal increases in construction and agricultural employment will probably be canceled out by reductions in manufacturing work forces.

While both total and nonfarm employment rose significantly last month, metalworking did little more than hold its own (see chart above). The increase in the five principal classifications came to only about 4000. Small as that was, it still

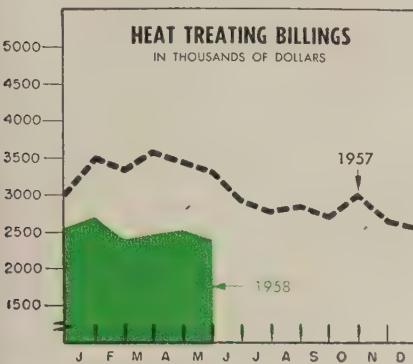
represents the first rise in well over a year of continuous decline in this industry.

While employment rose seasonally, so did unemployment and the total labor force. The rate of unemployment, seasonally adjusted, was 6.8 per cent last month, down from 7.2 per cent the month before—but 5,437,000 persons (a postwar record) wanted jobs and couldn't get them. One reason for the unusually heavy jobless figures is the steady rise in the civilian labor force. It reached a record 70.4 million in June, about 190,000 ahead of the previous record set in the corresponding year-ago month.

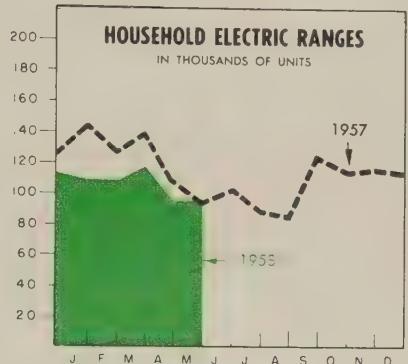
### Inventory Cuts Continue

Inventory liquidation has gone a long way, but it isn't over, says the First National City Bank of New York. Prospects are for continued (but slower) reduction, with increased production making up for goods now being sold out of stock. The bank points out that total business inventories have dropped only 4 per cent below the peak, compared with 6.6 per cent in the 1948-49 recession and 5.5 per cent in 1953-54.

The June report of the Purchas-



Metal Treating Institute.



	Total	Factory Sales	Units
	1958	1957	1956
Jan.	109,000	144,500	143,600
Feb.	108,700	127,700	161,400
Mar.	117,900	139,400	163,100
Apr.	95,600	107,200	157,500
May	96,000	93,600	128,400
June	102,300	129,800	
July	88,700	121,500	
Aug.	85,800	97,500	
Sept.	124,800	129,300	
Oct.	114,200	116,200	
Nov.	116,800	110,200	
Dec.	113,800	126,500	
Totals	1,358,800	1,585,000	

National Electrical Mfrs. Assn.

ing Agents Association of Chicago points to further reductions. Asked how their current inventories compared with a year ago, 76 per cent replied lower, 16 per cent said the same, and only 8 per cent said higher. By the end of the year, 39 per cent said they would cut stocks even more, while 46 per cent said they would hold where they are, and 15 per cent said they would build stocks.

## More Construction Records

The construction industry shows no signs of slowing down its comeback. June heavy construction contract awards set a record for that month at \$1.9 billion, declares *Engineering News-Record*. Last month was the sixth period in a row to show improvement, resulting in a cumulative total of \$9.6 billion for the first half. That's the second best figure on record (1956's first half was better) and was 2 per cent above the corresponding period of 1957.

July is taking up where June left off. The \$559 million marked up in the week ended July 10 represented the second best weekly total of the year, all the more remarkable because the week included only

four business days instead of five.

## Equipment Sales Better

The best month since last October was reported by the Foundry Equipment Manufacturers Association. New orders in May jumped to 136.1 (1947-49=100) from April's 88.7 mark. The May, 1957, level was 136.2. C. R. Heller, secretary-treasurer of the association, feels that some of the improvement was the result of the American Foundrymen's Society's show that month, but it would be difficult to trace all of it to that source.

Ordinarily, this index fluctuates wildly, being influenced by a small number of large orders. But because it has been riding along at a consistently low level since last November, this upswing is being regarded with more than casual interest in the industry.

The Material Handling Institute Inc. reports that new business for its members in May held at about the April level, totaling 118.04 per cent of the 1954 average. Industry spokesmen say their business has taken a definite turn for the better, with strong indications that dollar volume in the fourth quarter will top that of the 1957 period.

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**Balls**

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**AND**  
**STAINLESS**

**COOLIDGE CORPORATION**  
**MIDDLETOWN, OHIO**

# Ohio Rolls

shaping metal for all Industry

NC 9438

## Ohio Iron and Steel Rolls

Carbon Steel Rolls

Ohioloy Rolls

Ohioloy "K" Rolls

Flintuff Rolls

Double-Pour Rolls

Chilled Iron Rolls

Denso Iron Rolls

Nickel Grain Rolls

Special Iron Rolls

Nioly Rolls

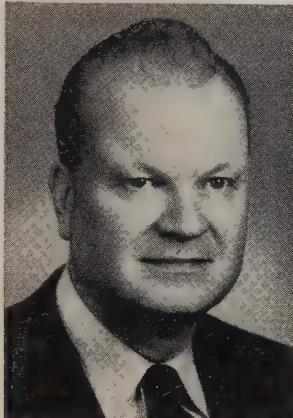
Forged Steel Rolls



THE OHIO STEEL FOUNDRY CO.  
LIMA, OHIO

Plants at Lima and Springfield, Ohio

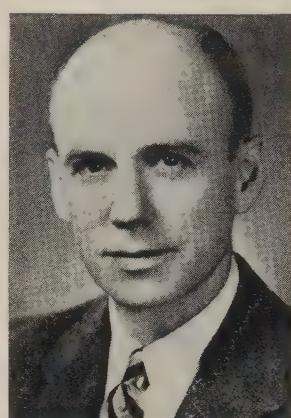
LIMA... Virtually at the center of the steel industry



CARL W. HUFLAGE  
Cochran Foil v. p.



DR. P. WILLIAM BAKARIAN  
R-N Corp. president



FRANK H. ROBY  
joins Federal Pacific Electric



JAMES MEEHAN  
new post at Brown & Sharpe

**Carl W. Huflage** was elected vice president, **Cochran Foil Corp.**, Louisville, subsidiary of Anaconda Co. He will direct sales and marketing of aluminum sheet, foil, and laminated foil.

**Dr. P. William Bakarian** was made president - general manager, **R-N Corp.**, New York, which is owned equally by National Lead Co. and Republic Steel Corp. **J. S. Breitenstein** was named vice president-administration; **Rollin P. Smith**, vice president-engineering. Mr. Bakarian, who succeeds **Alex Stewart**, retired, was president of Cramet Inc., Chattanooga, Tenn. Cramet, a jointly owned subsidiary of Republic Steel Corp. and Crane Co., terminated operations and returned its plant to the government several months ago.

**Karl W. Galliger**, engineering director, **New York Air Brake Co.**, was appointed manager of engineering, Watertown, N. Y., division. He replaces **John A. Vaughan**, resigned.

**Charles W. Sinclair** was made vice president-engineering for all divisions of **Kelsey-Hayes Co.**, Detroit. He was chief engineer, automotive division.

**Patrick Bradley** was made manager of distributor sales, **American Hoist & Derrick Co.**, St. Paul.

**Myron Baldwin** was made manager, instrument division, **Beckman & Whitley Inc.**, San Carlos, Calif. He continues as sales manager for meteorological systems and high-speed research cameras.

**Frank H. Roby** was elected an executive vice president, **Federal Pacific Electric Co.**, Newark, N. J. He was vice president, **Square D Co.**

**Keith J. Brownell** was made vice president-sales, bearing division; **Martin L. Brody**, sales manager, bearing division, **McGill Mfg. Co. Inc.**, Valparaiso, Ind.

**Harley T. Pyles** was elected vice president-treasurer; **W. Bradley Blair**, vice president-sales, **Fairmont Aluminum Co.**, Fairmont, W. Va., subsidiary of Cerro de Pasco Corp.

**Robert P. Thomsen** was made sales manager, **Dollinger Corp.**, Rochester, N. Y. He succeeds **Lewis L. Dollinger Jr.**, recently elected president.

**J. P. Gasser** was elected executive vice president of **Dresser Industries Inc.**, Dallas. He was executive vice president, Seaboard Oil Co.

**John M. S. Hutchinson** joined **Bendix Aviation Corp.**, Detroit, as staff assistant to the president on manufacturing activities. He was vice president, assistant to the president, **Perkin-Elmer Corp.**, which he joined in 1955. Previously he served with **Chrysler Corp.**

**American Can Co.** appointed new presidents for its subsidiaries, **Sun Tube Corp.** and **Bradley Container Corp.** **Kenneth M. Leghorn** is president of Bradley, with headquarters in Maynard, Mass. Former president of Sun Tube, Hillside, N. J., he is succeeded by **Joseph D. Martin**, executive vice president.

**Brown & Sharpe Mfg. Co.**, Providence, R. I., announces sales appointments in its machine tool division, effective Aug. 18. **James Meehan** was made assistant to the general sales manager. He was director of grinding machine sales, and is succeeded by **Alfred R. Sparrow**, formerly director of screw machine sales. **Walter W. Appleton**, former district sales manager in Canada, succeeds Mr. Sparrow. **Ronald C. Smith** was made sales representative in Canada. **Duncan J. Brown** was named director of milling machine sales, effective June 23.

**Square D Co.**, Detroit, appointed **Robert E. King** distribution equipment sales manager, effective Aug. 1. He succeeds and will report to **Mitchell P. Kartalia**, recently made marketing division general manager.

**J. R. Dempsey** was appointed a vice president, **Convair Div.**, General Dynamics Corp., San Diego, Calif.

**Lee Fister** succeeds **LeRoy V. Black**, retired, as superintendent, electrical department, **Bethlehem Steel Co.**, Bethlehem, Pa.

**SKF Industries Inc.**, Philadelphia, named **Brendan J. Fraher** eastern regional manager; **Richard S. Overton**, director of marketing, sales division. Mr. Fraher succeeds **E. M. Ogle**, named to the new post of manager of ball sales.

**R. C. McDonald** was made New York district manager, **Clark Bros. Co.**, Olean, N. Y., one of the Dresser Industries. He succeeds **Robert J. Spears**, now assistant general sales



**C. V. FRYLING**  
Allegheny Ludlum Steel appointments



**E. A. RANDICH**



**JACK T. WELCH**  
Sheffield Corp. vice presidents



**WILLIAM I. WILT**  
Sheffield Corp. vice presidents

manager, transferred to the Olean home office.

**C. V. Fryling** was named product manager, electrical alloy materials, Allegheny Ludlum Steel Corp., Pittsburgh. **E. A. Randich**, supervising engineer, specifications section, was appointed chief mechanical engineer, general engineering division. **Edward W. Schnabel** was named manager, tool and die materials, St. Louis district sales office.

**W. Drury Clark** was elected president, Simplex Machine Tool Corp., Milwaukee. He was acting president. **J. A. Elwood**, factory manager, and **P. O. Wernicke**, chief engineer, were named vice presidents.

**Leston Faneuf** was elected chairman and re-elected president, Bell Aircraft Corp., Buffalo. **Harvey Gaylord** was elected senior vice president, a new post. He is president of Bell Helicopter Corp., subsidiary in Ft. Worth, Tex. **W. M. Smith** and **J. H. vanLonkhuyzen** were made assistant vice presidents.

**Claude A. Marlowe** was elected vice president of Treedsdale Laboratories and Textile Processing Co., Mars, Pa. He continues as general manager, Pittsburgh Metals Purifying Div.

**Robert C. Downie** was made assistant to the president of National Electric Products Corp., Pittsburgh. He will handle procurement relations with government agencies and contractors engaged in rocket and missile work. He was assistant general manager and assistant to the president of Superior Steel Corp., prior to its merger with Copperweld Steel Co.

**Sheffield Corp.**, Dayton, Ohio, subsidiary of Bendix Aviation Corp., appointed **Jack T. Welch** vice president-field sales; **William I. Wilt**, vice president-gage and instruments division. Previously, both were assistant vice presidents of their divisions. **Victor J. Boll** was made assistant vice president, contract manufacturing division, advancing from general manager of the division. **Thomas W. Clark** was made assistant vice president, service facilities division. He was general manager of the firm's out-of-Dayton plants.

**Chrysler Corp.**, marine and industrial engine division, Detroit, named **Raymond C. Davis** to the new post of director, planning and production control; **Bruce B. Spratling** to the new post of parts sales manager; **Glenn E. White**, division comptroller.

**Hevi-Duty Electric Co.**, Milwaukee, announces additions to its furnace staff, subsequent to acquisition of the industrial furnace division of Eclipse Fuel Engineering Co. **Richard Hayden** was placed in charge of gas furnace sales. He was head of the division at Eclipse. **Norman Acker**, superintendent of the furnace manufacturing shop at Eclipse, will perform liaison work between the engineering, sales, and production departments at Hevi-Duty. **William Swanson** was made a sales and service engineer.

**Joseph Meisler** was made technical commercial manager, cryogenics department, Philips Electronics Inc., Mt. Vernon, N. Y.

**Charles W. Parker Jr.** fills the new post of sales promotion director,

industries division, Allis-Chalmers Mfg. Co., Milwaukee.

**Oakite Products Inc.**, New York, appointed **William A. Baltzell** industrial sales manager. **Dr. Clarence Bremer**, former director of research, was made technical director.

**F. A. Huhn** was made assistant vice president-accounting, United States Steel Corp., Pittsburgh.

**Douglas C. Bielenberg** was made distributor sales manager for Pheoll Mfg. Co., Chicago. He was with National Cash Register Co.

**Clare E. White** was elected president and chief operating officer, Ungava Iron Ores Co., Montreal, Que. He was general manager, United Keno Hill Mines Ltd., Elsa, Yukon Territory.

**Robert R. Pierce** was named manager, corrosion engineering products department, Pennsalt Chemicals Corp. In charge of manufacturing, sales and development, he has headquarters in Natrona, Pa.

**Copeland Refrigeration Corp.**, Sidney, Ohio, appointed **B. W. Moreland** general manager of manufacturing.

**Robert H. Chirgwin** was elected vice president-sales, Dynatron Corp., West Hartford, Conn.

**William G. Everingham** was made manager of Chevrolet Motor Div.'s V-8 engine plant, Flint, Mich., General Motors Corp. He succeeds Major W. Clark, retired. **Bernard T. Christy** succeeds Mr. Everingham as operations manager of the 6-cylinder motor plant. **William J. Mas-**

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NOTE THESE  
*built-in  
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BACK GUARD—protects operator on adjacent machines

ADJUSTABLE ELECTRIC EYE—for full bundle stop

EXTRA-HIGH FINISHING BLOCK GUARD—for large bundles on riding block stripping spiders

BROKEN WIRE SWITCH—for instant shutdown if break occurs

PINTE SAFETY HOLD-DOWN—prevents riding stripper from being forced up by wire being coiled

FRONT SAFETY GUARD—stops machine if pushed. Machine will operate only at inching speeds if guard is lowered

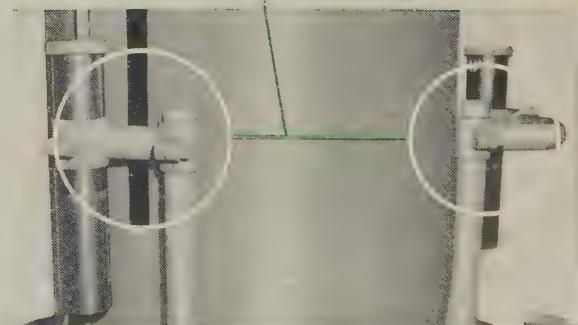
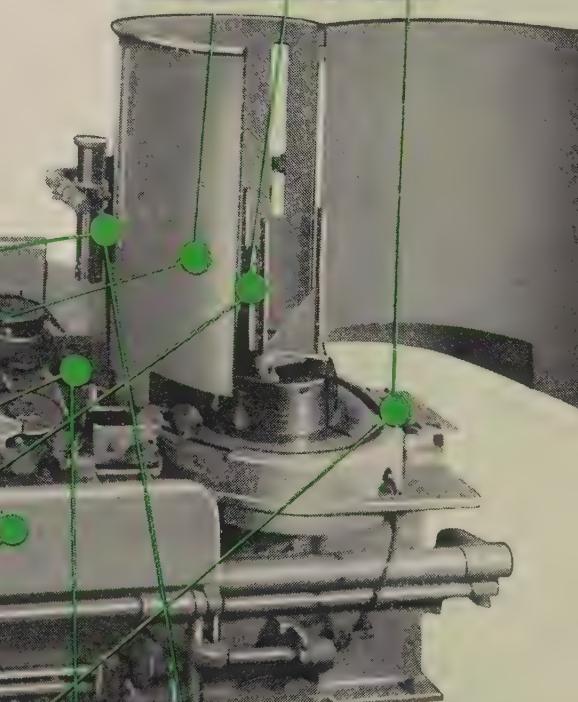
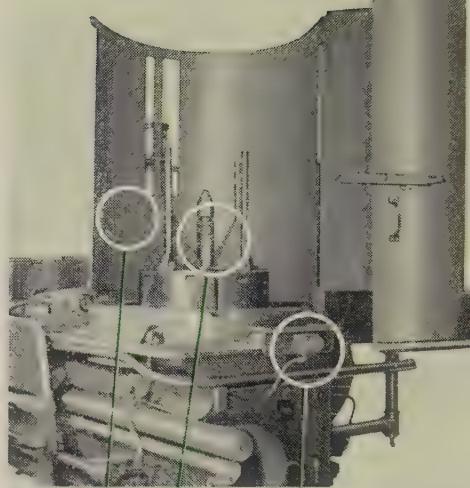
BLOCK GUARD SAFETY SWITCH—stops operation when guard is opened

SAFETY for men and equipment is engineered thoroughly into Vaughn Wire Drawing Machinery—in every type, in every model. The high operating speeds of modern Vaughn machines are *safe* speeds because of this engineering. Our Motoblox, Motoblocs, Ringblox and other equipment are designed to match *productivity with protection* over the widest range. Let us detail our many safety developments, at your convenience.

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**EARL W. MAHANEY**  
Youngstown Sheet & Tube post



**ROBERT J. LINNEY**  
Reserve Mining exec. v. p.



**JOHN L. DAWSON**  
J&L dept. supt.-Aliquippa



**H. T. THOMPSON**  
Standard Screw sales post



**PAUL M. SCHAEFER**  
Wheeling Steel plant supt.



**A. F. FINKL**  
A. Finkl & Sons v. p.

sey Jr. was made operations manager, Detroit forge plant, succeeding John G. Moorhead, retired.

Standard Screw Co., Bellwood, Ill., promoted H. T. Thompson to sales manager, standard fastener products, for its division, Chicago Screw Co. E. L. Claussen was made vice president in charge of Stanscrew sales; R. W. Grady, sales manager, standard fasteners, Hartford Machine Screw Div. W. J. Cox continues sales supervision of Stanscrew for the division, Western Automatic Machine Screw Co.

Rear Adm. Mitchell D. Matthews, USN, ret., was made manager of the service and repair division of De Laval Steam Turbine Co., Trenton, N. J.

John A. Grimes was made general manager, test equipment division, Consolidated Diesel Electric Corp., Stamford, Conn.

James M. Arnold was made vice president-general manager, Recordak Corp., New York, subsidiary of Eastman Kodak Co.

Earl W. Mahaney was made chief metallurgist, Indiana Harbor Works, East Chicago, Ind., Youngstown Sheet & Tube Co. He succeeds Myron A. Jones, named metallurgical engineer to serve under E. S. Steigner, supervisor of service engineering. Mr. Jones's headquarters are at Indiana Harbor Works.

Robert J. Linney, vice president-operations, was elected executive vice president, Reserve Mining Co., Silver Bay, Minn. W. M. Kelley, former president, has retired from active business, but continues as a director. The office of chairman has been abolished. An official of Republic Steel Corp. and an official of Armco Steel Corp. will alternate each year as president. C. M. White, chairman of Republic, will serve for the ensuing year.

John L. Dawson was made superintendent, blooming, hot strip, and rolling mills department, Aliquippa, Pa., Works, Jones & Laughlin Steel Corp. He succeeds the late Lewis C. Sowell.

## OBITUARIES...

Dr. Samuel W. Martin, 47, a vice president of Great Lakes Carbon Corp., New York, and general manager, research and development department, died July 10.

Roy C. McKenna, 75, chairman, Vanadium - Alloys Steel Co., Latrobe, Pa., died July 12.

James H. Ward, vice president, Bethlehem Steel Corp., New York, died July 12.

Fred W. Schlichter, 52, president, Hamilton Tool Co., Hamilton, Ohio, died July 4.

E. R. Bonnist, 62, advertising director, Cooper-Bessemer Corp., Mt. Vernon, Ohio, died July 6.

Edward A. Courter, 52, vice president, Turner Construction Co., New York, died July 5.

Clayton W. Work, sales promotion manager, instruments and controls division, Hagan Chemicals & Controls Inc., Pittsburgh, died June 19.

# Steel Mills Prepare for Upturn

Expansion and modernization programs being completed and planned assure fabricators of ample sources of improved products. Progress continues despite recession

STEEL PRODUCERS are improving their facilities to meet increasingly rigid requirements of their customers. At the same time, they are expanding their capacities in anticipation of much larger demand in the next decade. The present business setback has not halted programs which were underway nor seriously hampered the launching of new projects.

**Jones & Laughlin Steel Corp.** has resumed operations at its Cleveland Works following completion of an \$82-million program (STEEL, Feb. 10, p. 73). Capacity to produce cold-rolled sheets at this plant has been doubled.

**United States Steel Corp.** says a second continuous tube mill will be built at National Tube Div.'s plant at Lorain, Ohio. Construction work on the first mill was started in May and is scheduled for completion by 1961. It will have an annual capacity of 237,000 tons of finished pipe (STEEL, May 12, p. 73).

The corporation's Columbia-Geneva Div. is operating the third new high-speed electrolytic tinning line at its Pittsburg, Calif., plant. The other two started producing in 1948 and 1953. The new facility employs the latest devices for product and quality control, including nuclear radiation and photoelectric detectors and gages. Other innovations include a built-in data collecting system which provides a continuous recording of the thickness of both the steel and the tin coating, and other data to insure output of a uniform product. It can supply tin plate for shipment in coils as well as cut lengths.

**Kaiser Steel Corp.** has completed installation of an 86-in. hot strip mill at its Fontana, Calif., plant. It includes three furnaces to preheat steel slabs prior to rolling, a scale breaker to prepare heated slabs for rolling, and 11 roughing and finishing rolling stands arranged in tandem.

"This new mill is one of the most important facilities in the company's current \$214-million expansion pro-

gram," says J. L. Ashby, vice president and general manager. "It not only means that more hot-rolled sheets and strip will be available for western builders, manufacturers, and fabricators, but it also will result in substantially increased capacity from Kaiser Steel's plate mill." The hot strip mill formerly was dependent on the plate mill for partially rolled slabs; the new mill makes more rolling time available for plate production.

Still under construction are three basic oxygen furnaces, a fourth blast furnace, 90 coke ovens, a slabbing mill, and an enlargement of the plate mill. The expansion will virtually double Kaiser Steel's capacity from 1,536,000 to 2,933,000 ingot tons a year.

**Lukens Steel Co.** completed the first major phase of its \$33-million expansion program as massive new soaking pits began heating ingots weighing up to 75 tons each. Other facilities to be completed by the spring of 1959 include an electric furnace which will raise the firm's ingot capacity by some 25 per cent to 930,000 tons a year and a 140-in. rolling mill which will raise its rolling capacity by some 40 per cent. A total of nine pits, each capable of holding up to 200 tons of ingots, make up the new soaking pit battery at Lukens.

Lukens has also completed work on what the firm claims to be the heaviest spun and pressed heads ever formed. Two heads, each weighing 22,540 lb and measuring 7 ft in diameter, were made from plate 6-9/64 in. thick. Four heads, each weighing 16,340 lb, were made on a press that exerts a force of up to 4 million lb. Each of these heads was 71.75 in. in diameter and was made from plate 7 in. thick. Lukens' 206-in. mill rolled the carbon steel ingots from which these record-setting head shapes were formed.

**National Steel Corp.** has enlarged sintering facilities at plants of its subsidiaries, Weirton Steel Co. and Great Lakes Steel Corp. The new

plant at Weirton with capacity of more than 6000 tons a day has been placed in operation. The sintering machine is 12 ft wide and 147 ft long. A still larger machine (12 ft by 153 ft) will be placed in operation Aug. 1 at Great Lakes.

## Plans Stamping Plant

**Metals Engineering Corp.**, a recently organized \$1-million firm, is establishing a metal stamping plant at Greeneville, Tenn. It is scheduled to be in production this fall. Departments will include: Drill press, diecasting, tool and die, and foundry. Robert C. Austin is president. A. T. Wright heads up engineering.

## To Close Duluth Plant

**Western Electric Co.**, New York, plans to shut down its Duluth plant by Sept. 30. Alvin Jacobs, plant superintendent, says the decision was forced by a drop in demand for the plant's output, brought on by the nationwide recession.

## GE To Build Laboratory

**General Electric Co.**, Schenectady, N. Y., plans to construct a \$1-million high voltage laboratory at Philadelphia. The research and development facility will be in addition to the \$10-million switchgear laboratory at 76th Street and Lindbergh Boulevard, that city, which was completed in 1952.

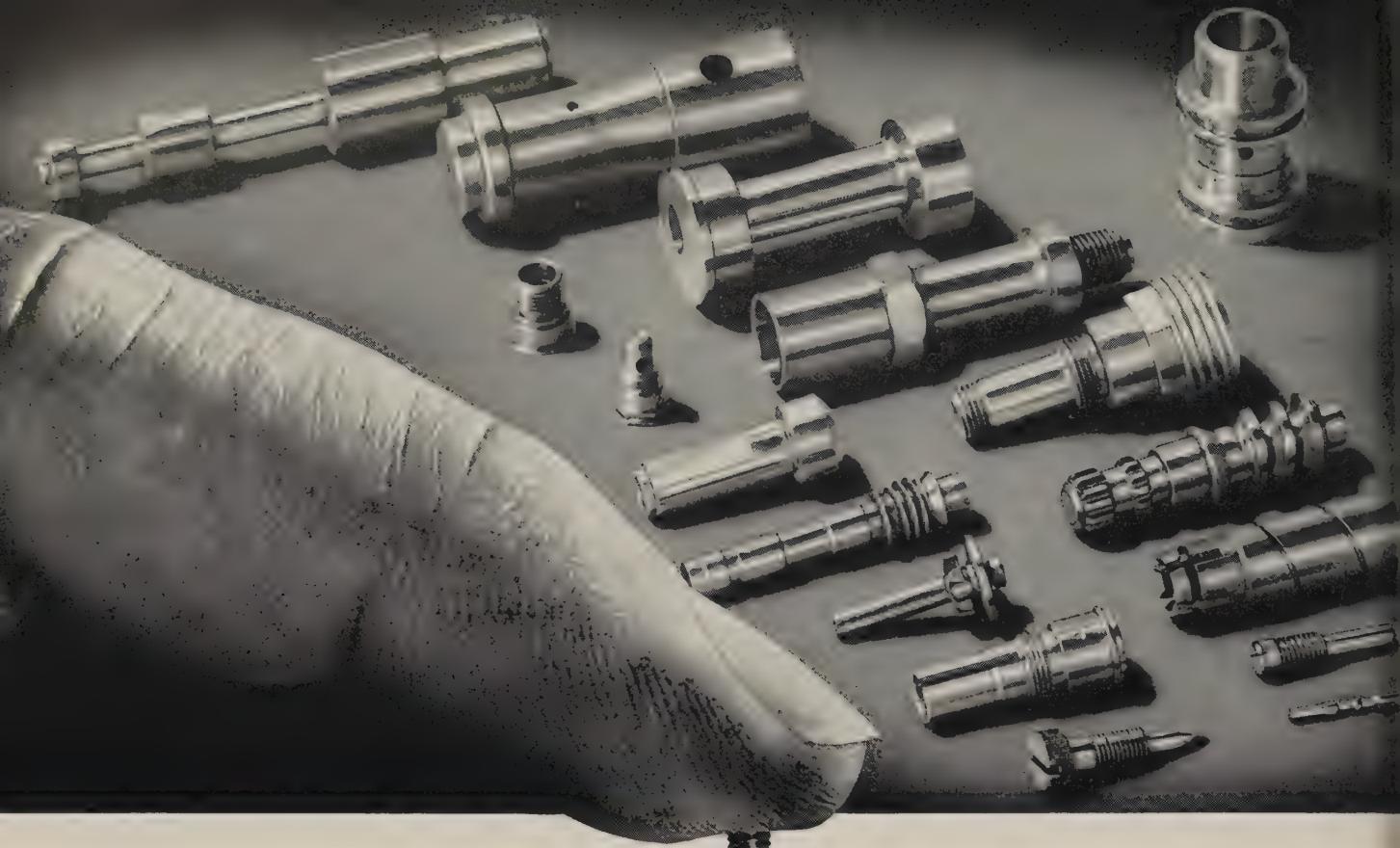
## Enlarges Birmingham Plant

**Fontaine Truck Equipment Co. Inc.**, Birmingham, is completing a \$150,000 expansion, adding 40,000 sq ft of manufacturing space. It recently installed facilities to make dump bodies and dump trailers.

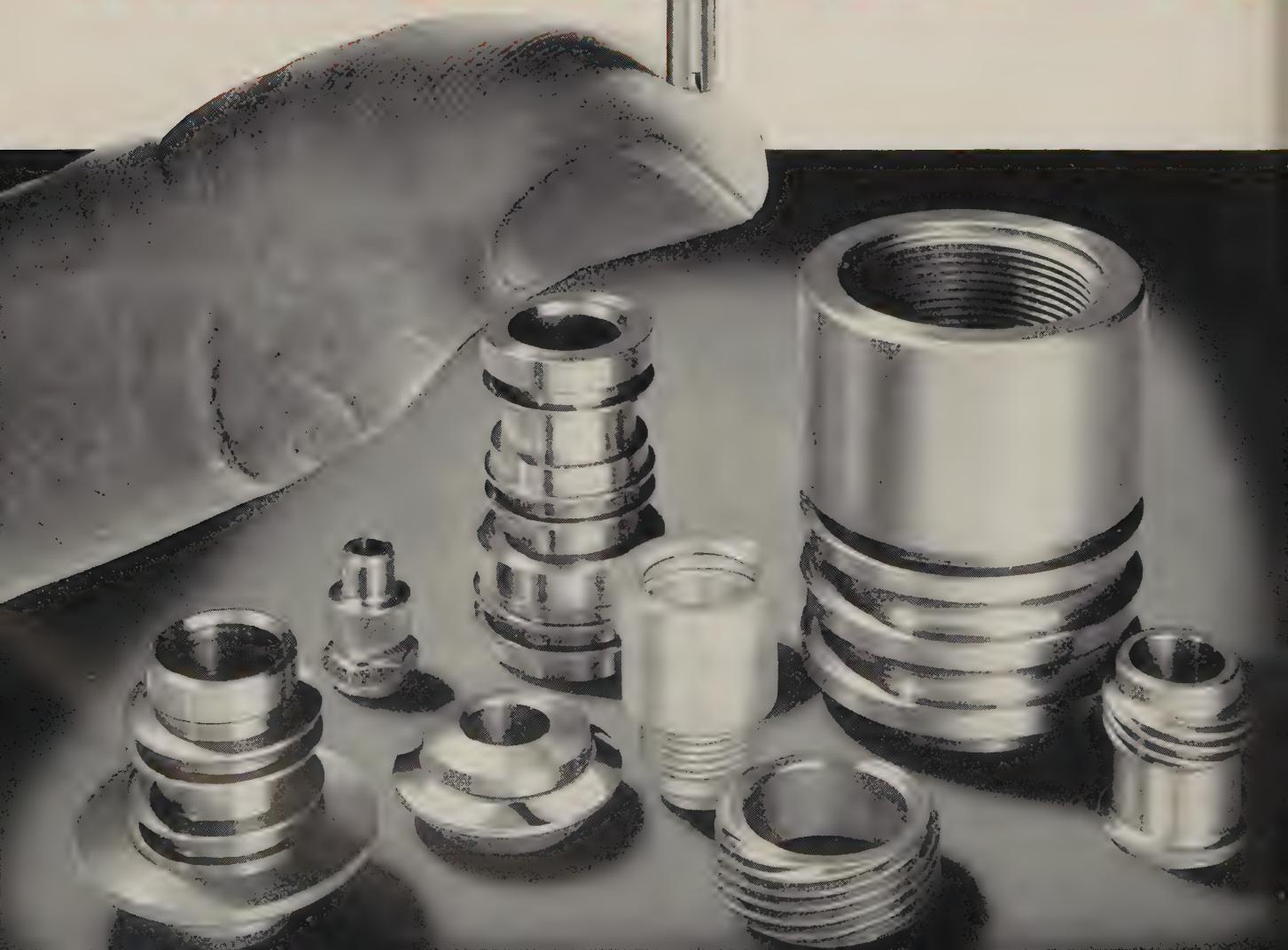
## Shell Oil To Build

**Shell Oil Co.**, New York, has launched expansion and development of its lubricating oil manufacturing facilities to double production of high viscosity oils. The program's unofficial cost estimate: \$40 million. The project will include a vacuum fractionating unit and a phenol solvent extraction plant. Facilities to separate wax and asphalt

(Please turn to Page 102)



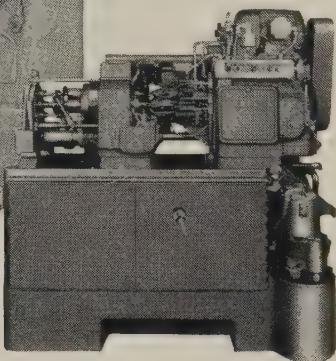
**Produce parts like these on**





One of the larger Acme-Gridley Automatics—a 6" RB6, weighing 72,000 pounds.

Newest Acme-Gridley—the  $\frac{1}{16}$ " RA6, weighing only 5,200 pounds.



## ACME-GRIDLEY automatics...

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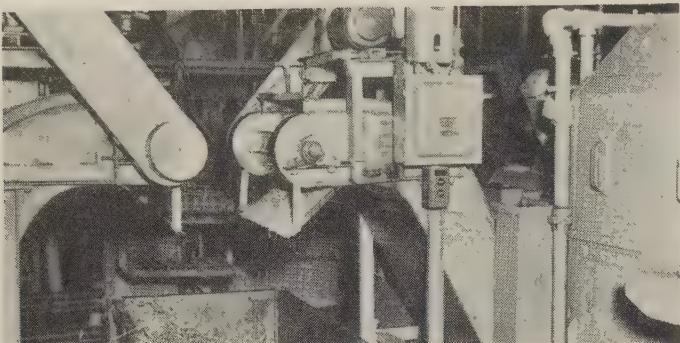
Most parts machined on Acme-Gridleys are completed on Acme-Gridleys. Using these Automatics, you eliminate costly rehandling and, in many instances, avoid a sizeable second-machine investment.

The advantage applies to parts weighing fractions of ounces or hundreds of pounds. And the wide-open tooling zone of every Acme-Gridley lends itself to a broad range of installations limited only by the tool engineer's ingenuity. It means that, for sheer capacity range, no line of automatic production equipment in the world equals Acme-Gridley.

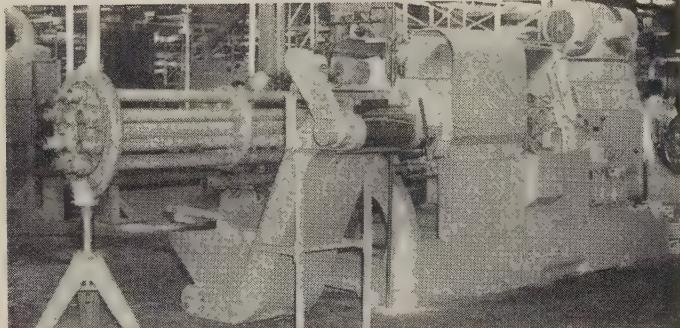
If you produce parts like the ones illustrated, then Acme-Gridley Automatics must be in your present plans. Our representative can give you expert assistance without obligation.

# National Acme

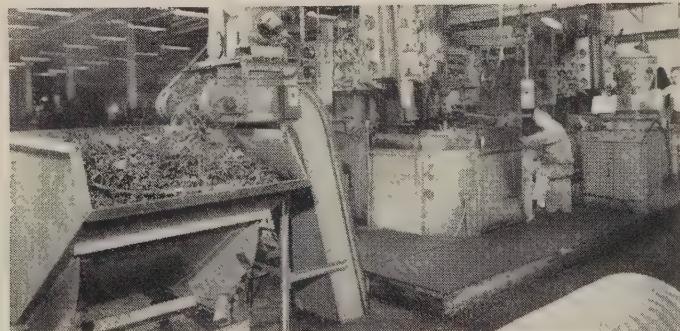
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CONTINUOUS SCRAP REMOVAL



FROM ALMOST EVERY TYPE AND  
SIZE OF MACHINE TOOL

Here is a machine tool accessory that will cut production costs, and permit longer "run" times for your automatic machines. The MAY-FRAN CHIP-TOTE continuously removes the chips, turnings and borings from machines. The conveyor can be synchronized with the metal removing capacity of the machine. Scrap is channeled onto the CHIP-TOTE belt, carried clear of the machine for discharge into tote box or carry-off conveyor system. There is a CHIP-TOTE for every machine tool.

**MAY-FRAN**

ENGINEERING, INC.

1725 Clarkstone Road, Cleveland 12, Ohio

For complete facts,  
write today and ask  
for MF-640.



(Concluded from Page 99)

from petroleum will also be improved and expanded. Future plans call for construction of units to purify waxes.

## Fulton Tubing To Build

Fulton Tubing Co. is building a plant at Archbold, Ohio. The firm is a division of Higbie Mfg. Co., Rochester, Mich.

## Broadens Heating Services

Lindberg Steel Treating Co., Melrose Park, Ill., acquired the processing facilities of the flame hardening department of Metal Improvement Co., Los Angeles. These have been integrated into the selective heating services of Lindberg's branch at 2910 S. Sunol Dr., Los Angeles.

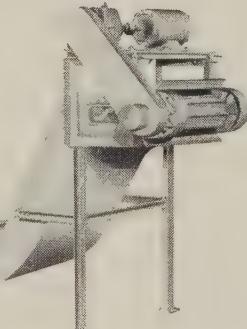
## Buys Wooldridge Div.

Curtiss-Wright Corp., New York, purchased the Wooldridge Div., Sunnyvale, Calif., from Continental Copper & Steel Industries Inc., New York. The earthmoving equipment manufacturing operations will be transferred to Curtiss - Wright's South Bend (Ind.) Div.

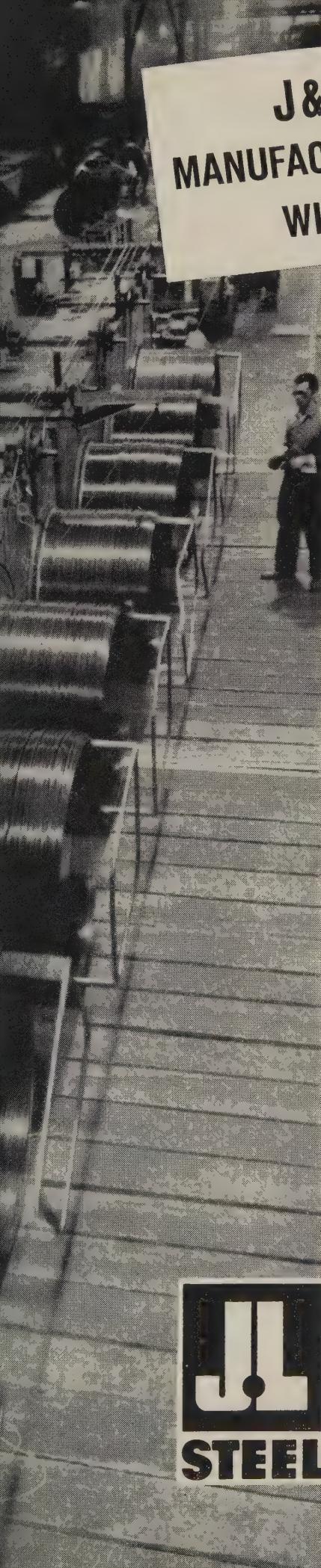
## Ferro Expands Further

Ferro Corp., Cleveland, plans to expand its Fiber Glass Div. at Nashville, Tenn., and Ferro Enamel S. A., Sao Paulo, Brazil. The program will cost about \$500,000.

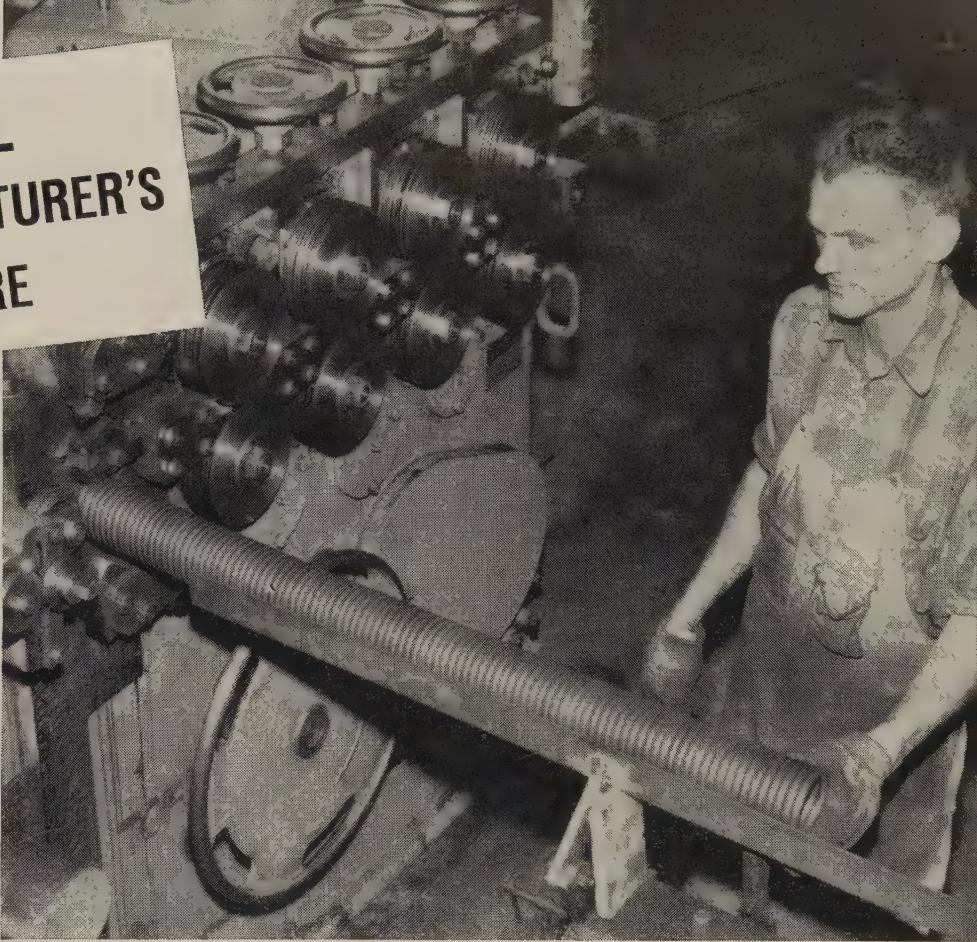
## Fairless To Get Big Crane



Alliance Machine Co., Alliance, Ohio, is constructing a 525-ton ladle crane for U. S. Steel Corp.'s Fairless Works, Fairless Hills, Pa. Alliance officials say the ladle crane will be the largest in existence. By using special alloy steels, the crane can be installed on runways now carrying 450-ton cranes. Construction features include: Auxiliary trolley equipped with 100-ton hoist and 25-ton auxiliary hoist; main hoist of interlock drum type, synchronized worm drive, equipped with two motors; main trolley equipped with 16 track wheels; main hoist having 68 parts of 1½-in. steel hoisting ropes; and crane equipped with ten motors, having a total of about 1500 hp.



# J&L MANUFACTURER'S WIRE



Crawford Door Company uses J&L superior quality, oil-tempered spring wire in 18 sizes for torsion and extension springs. Springs range from a few feet long to giants over 12 feet long, capable of raising 3,500-pound industrial doors without effort.

## "UNIFORM HEAT TREATING AND TEMPERING PAYS OFF IN SUPERIOR J&L SPRING WIRE"

... says Crawford Door Co. official

"J&L has a superior spring wire because of the control they are able to maintain in their heat treating and tempering operations," reports Mr. Jerome Fansler, vice-president of the Crawford Door Company, Detroit, Michigan.

"J&L spring wire is properly tempered. This means the wire will coil uniformly. There are no surface imperfections or potential breaking points."

Crawford Door uses J&L oil-tempered medium basic spring wire for torsion and extension springs. They buy 18 sizes, ranging from .192 ( $\frac{13}{64}$ ") to .293 ( $\frac{19}{64}$ ").

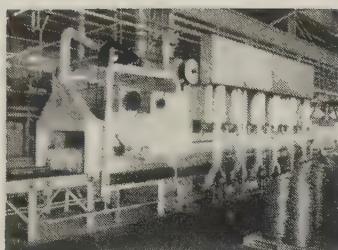
Every coil of J&L spring wire is thoroughly tested for uniformity of physical and dimensional properties. This uniformity can speed your production, reduce the number of rejects. J&L has complete control of wire quality from ore through finished product. When you specify J&L, you are sure of wire that is tops in quality yet competitive in price.

Next time you buy wire, call in your J&L representative for fast, satisfying service. Or write direct to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

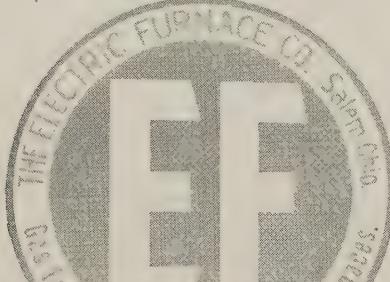


## Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA



Another EF multi-purpose gas fired radiant tube, forced circulation roller hearth furnace used for bright finish annealing coils or straight lengths of copper tubing; also coils of thin gauge copper strip.



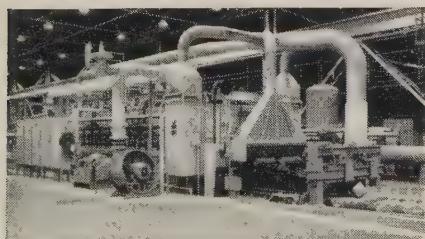
## congratulates AMERICAN BRASS on opening new plant in LOS ANGELES

The new plant of The American Brass Co. at Los Angeles—the West Coast's newest and largest brass mill—incorporates only the most modern methods and plant equipment for producing copper and brass strip, tubing, rod and other forms of brass, copper and copper alloy mill products.

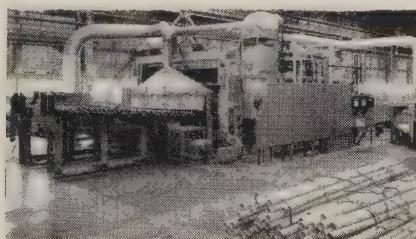
This progressive step in the Company's extensive and continuous modernization program, and the strategic location of this new plant, makes possible the economical production of large quantities of copper and brass products of the highest quality, standards of precision, and uniformity, and provides the means for rendering even better service to their customers in that area.

Long experience and the high standards of EF design contributed to the selection of The Electric Furnace Co. as the designers and builders of the furnaces required for this modern plant.

**Submit your production furnace problems to experienced EF engineers—it pays.**



An EF direct gas fired, 2 row, chain strand conveyor furnace for heating copper alloy billets for extrusion.



This EF direct gas fired, 2 row, screw conveyor furnace heats copper and copper alloy billets for piercing.

### BULLETIN No. 461

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

**Send for a copy today!**

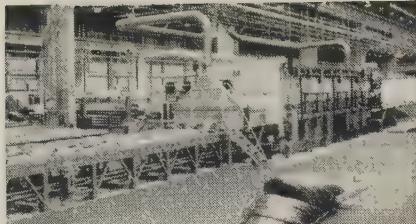


### THE ELECTRIC FURNACE CO.

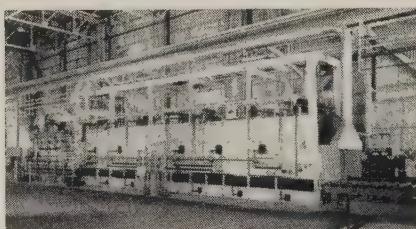
GAS-FIRED, OIL-FIRED AND ELECTRIC FURNACES  
FOR ANY PROCESS, PRODUCT OR PRODUCTION

Salem - Ohio

Canadian Associates • CANEFCO, LIMITED • Toronto 13, Canada



EF direct gas fired forced circulation roller hearth furnace for process and finish annealing copper and copper alloy tubing and rod in coils and straight lengths — also handles coils of wire.



This EF twin-chamber multi-purpose direct gas fired roller hearth forced circulation furnace uniformly anneals coils of copper or brass strip—operates either intermittently or continuously.



Whitnon Mfg. Co., Farmington, Conn., opened a plant at 20466 Wyoming Ave., Detroit 21, Mich., which specializes in the repair and reconditioning of antifriction spindles. The firm makes spindles for boring, grinding, milling, and drilling.

HEF Inc., Philadelphia, is constructing a plant to produce ammonium perchlorate, an oxidizer used in solid propellents for rockets and missiles. Lithium perchlorate also can be produced. The facility is adjacent to the Columbus, Miss., plant of Hooker Chemical Corp., Niagara Falls, N. Y. one of the parent firms. The other owner is Foote Mineral Co., Philadelphia.

Alloy Steels Inc., Detroit, is establishing a branch warehouse at 2531 Needmore Rd., Dayton, Ohio. Operations will start about Aug. 15.

Rio Tinto-Dow Ltd., a recently formed subsidiary of Rio Tinto Mining Co. of Canada, Toronto, Ont., and Dow Chemical of Canada Ltd., Sarnia, Ont., will build a chemical plant north of Elliot Lake, Ont.

Pesco Products Div., Borg-Warner Corp., Bedford, Ohio, moved all activities of its Automatic Warehousing Branch to Wooster, Ohio. The branch is engaged in the design, development, fabrication, and installation of reserve storage warehouse systems featuring semiautomatic or automatic operation and of custom material handling equipment. The branch also produces conveyorized production line systems and tooling for service and overhaul of jet engines.

K S M Products Inc., Merchantville, N. J., established a manufacturing plant and sales office at 379 Bering Ave., Toronto, Ont. The firm makes studwelding equipment, accessories, and welding studs. William Pennycook is sales manager for Canada.

Skyvalve Inc., Syracuse, N. Y., established manufacturing and office facilities at 2308 Washington Blvd., Venice, Calif. The firm is

a subsidiary of Engelberg Inc. and specializes in the development and manufacture of high-pressure pneumatic and hydraulic valves for aircraft, missiles, and rockets. R. L. Schaller, vice president and general manager, will supervise operations at Venice.



## CONSOLIDATIONS

**Idaho Maryland Mines Corp.**, San Francisco, acquired Sierra Tool & Mfg. Co., Glendale, Calif., producer of components and assemblies for aircraft and guided missiles.

**Yuba Consolidated Industries Inc.**, Benicia, Calif., is acquiring Judson Pacific-Murphy Corp., Emeryville, Calif., steel fabricator. Judson Steel Corp., owner of a portion of the stock of Judson Pacific-Murphy, is divesting itself of that holding and will continue to produce reinforcing bars.

**Farrell Mfg. Co.**, Joliet, Ill., purchased Indiana Oil Equipment Co., Indianapolis. Farrell is a leading truck tank manufacturer; Indiana Oil Equipment, a large oil equipment jobber.

**Thompson Products Inc.**, and its affiliate, Ramo-Wooldridge Corp., will merge, subject to approval of stockholders. The resulting company will be named Thompson Ramo Wooldridge Corp. Officers will include: Board chairman and chief executive officer, J. D. Wright; president, Dr. D. E. Wooldridge; executive vice president, Dr. Simon Ramo; and head of the executive committee and special consultant, F. C. Crawford.

**Koehring Co.**, Milwaukee, producer of heavy construction equipment, purchased Ka-Mo Tools Inc., Cicero, Ill., maker of earth drilling and boring equipment. The Ka-Mo Tools business is a department of Kwik-Mix Co., a division of Koehring Co., under E. W. Maas.

**Ling Electronics Inc.**, Culver City, Calif., acquired United Electronics Co., Newark, N. J. United specializes in producing high energy, thermionic tubes and ceramic vacuum capacitors.

# Why Gamble on Blast Cleaning Efficiency?

**...when your profit is at stake!**

The chances are 3 to 1 that your blast cleaning operation costs you far more than it should. Check this list and see how many ways you can save.

### CHECK LIST OF BLAST CLEANING EFFICIENCY

#### IS YOUR BLAST EQUIPMENT ADJUSTED TO GIVE YOU MAXIMUM PRODUCTION BY:

1. Throwing the maximum amount of abrasive at the work?
2. Throwing an abrasive mixture with a full range of sizes, and no contaminants?
3. Throwing all the abrasive upon the work with minimum wear on machine parts?
4. Using the abrasive best suited for your application?

Yes	No	Don't Know

#### ARE YOU GETTING MAXIMUM CLEANING ECONOMY BY ELIMINATING ABRASIVE LOSSES:

1. Through the separator system?
2. Through the dust collector and ventilation system?
3. Through abrasive carried out with the work?
4. Through cabinet leaks and poor housekeeping?


#### ARE YOU REDUCING MAINTENANCE COSTS AND PRODUCTION LOSSES BY:

1. Obtaining longest possible life from wear parts?
2. Using preventive maintenance to reduce "down time"?


If you have to answer "no" or "don't know" to any of these questions, you're gambling with potential profit dollars. The best way to eliminate this gamble and save any profit "waste" is described in Wheelabrator Abrasive Bulletin No. 902D. Write for your copy today.

ABRASIVE DIVISION



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Mishawaka, Indiana



# LOOKING FOR MORE FROM

For steelcutting . . . trim costs with Carboloy® Extra-Performance Grades 330, 350, and 370, and low-cost, General-Purpose Carboloy 78 and 78B carbides

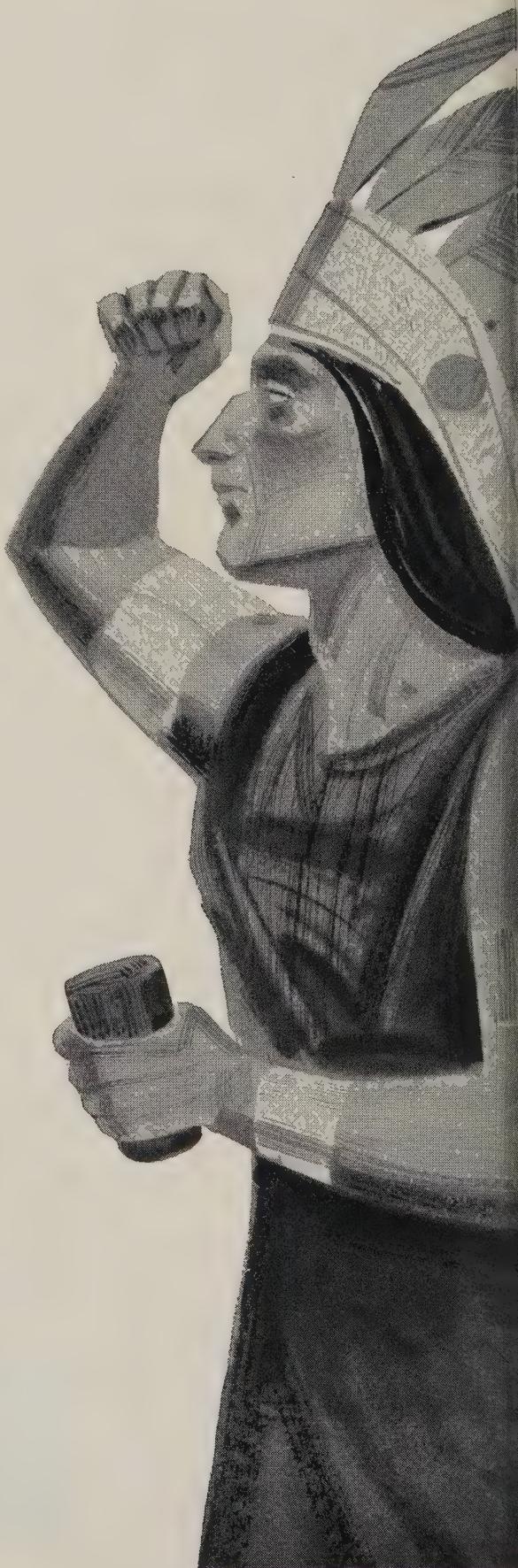
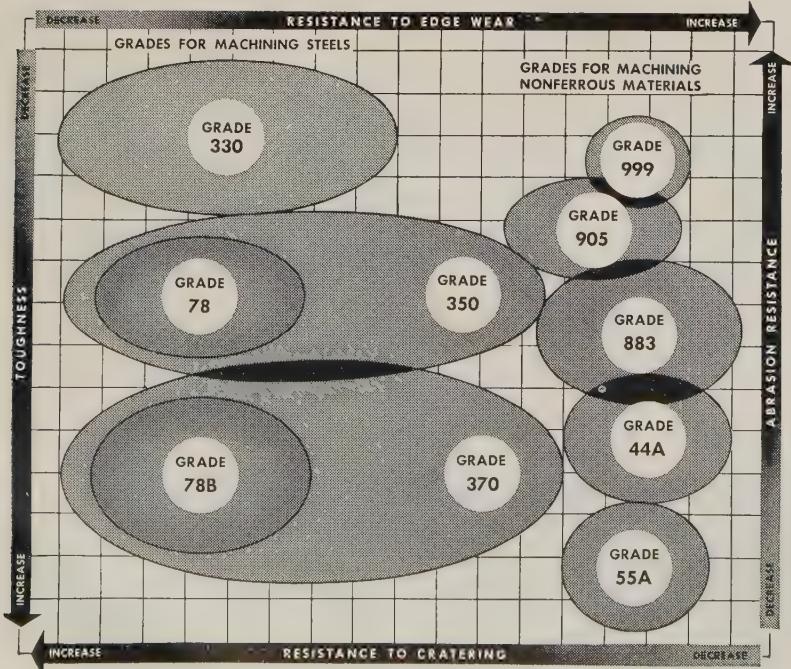
Some steelcutting jobs call for extra-tough, extra-performance carbides. Others can only be handled profitably with low-cost, general-purpose carbides. That's why we make them *both*.

Where you need increased machine productivity and have long production runs to keep cost-per-piece low—use Carboloy Extra-Performance Series 300 carbides. Their added strength and stamina handle jobs ranging from heavy roughing to high-speed finishing . . . at a unit cost and rate no "premium" carbide on the market can beat.

But, for general-purpose steelcutting jobs that don't require the Extra-Performance carbides, use Carboloy Grades 78 and 78B. Their top-notch performance, at low initial tool cost, will keep your machines operating profitably.

Chances are, your plant should be using *both* grades. Your local Authorized Distributor of Carboloy cemented carbides can deliver tools, blanks and inserts you need . . . in a hurry.

This complete team of Carboloy cemented carbides gives you more for your carbide tool dollar!



# Technical Outlook

**NEW CELLULAR REFRACTORY**—Pittsburgh Corning Corp. has introduced an insulating and refractory material made from 99 per cent pure silica that can be used in blast furnaces and heat treating furnaces where temperatures don't exceed 2200° F. Its lightness (10 to 12 lb per cu ft) also makes it a valuable stack lining material. Called Foamsil, the product resists most acids, is fireproof and waterproof, and is easy to cut.

**PORCELAIN-TO-ALUMINUM SEAL**—Ceramic material engineers at Westinghouse have a method for sealing aluminum to electrical porcelain that requires no intermediate material and no vacuum or atmosphere heat treatment. The seal is mechanically reliable and vacuumtight. It is made by bringing the porcelain (while at high temperature) in contact with molten aluminum. A chemical bond is formed between the two materials, says Westinghouse.

**SHAKE, RATTLE AND ROLL**—Package Research Laboratory, Rockaway, N. J., has set up joggle and jolt apparatus which will test the shipability of any package up to 10 tons total weight. Included is a vibrating machine, a drop test and stacking test pit, and an inclined impact tester.

**GAMMA RAYS CHECK FURNACE LEVEL**—Nuclear Corp. of America, New York, has developed an electronic device utilizing nuclear energy to determine the level of molten metal in a foundry furnace. Called Indicon I-100, the unit projects gamma rays through the furnace to two Geiger counters, mounted at maximum and minimum fill levels. The signal can be harnessed to actuate automatic furnace controls.

**TRACER READS PENCIL LINE**—A new development by Westinghouse Electric Corp. promises to eliminate tedious manual tracing in multiple gas torch cutting operations. Called Linatrol, it's a device that utilizes a vibrating photosensitive cell to accurately follow a pencilled drawing

or pattern. Compared with elaborate automatic tracing mechanisms, the use of Linatrol reduces pattern preparation costs, cuts initial equipment costs, and increases speed and accuracy, says Westinghouse.

**MORE DIE LIFE**—You can make solid forging dies of Haynes Stellite with an electrical discharge method, says Elox Corp. of Michigan, Royal Oak, Mich. You line the cavity completely with Stellite, and finish it with zinc-tin electrodes shaped like the finished part. Such dies last five times longer than those made of die steel, says Elox.

**ATOMIC TOOL TURNOVER**—If you expect to machine nuclear materials, be prepared for nearly 75 per cent more designing. Super Tool Co., a division of Van Norman Industries, Detroit, says design life is as little as 90 days. It maintains a "production" line of designers to keep pace with research changes.

**DRAWING FOR REDUCTION**—Companies that microfilm their engineering drawings for filing or distribution copies are finding that drawing techniques have to be revised to get the best results. Enlarged lettering, heavier lines, and simplification result in better microfilms. Bell Telephone Laboratories has set up standards for the purpose.

**ULTRACLEAN WITH ULTRASOUND**—Navy's new ultrahigh frequency cleaner handles complete jet engine assemblies (rotors, turbines, combustion chamber nozzles). The tank is 4 ft deep, 4 ft wide, and 6 ft long. The device cuts cleaning time for a jet engine from 12 hours to less than 1 hour.

**JET AGE AUXILIARIES**—Hobart Bros. Co., Troy, Ohio, is building outsize diesel-electric generating units on wheels to supply current for Boeing's new 707 jet airliners when they're on the ground. How big? The air conditioning alone requires 90,000 watts.

### OLD METHOD Hand Indexed Machine

Chassis components	Hours per unit
Layout and punch template . . . . .	12.00
Panels . . . . .	0.718
Chassis . . . . .	1.485
Side brackets . . . . .	0.100
Resistor board (on drill press) . . . . .	0.345

Total hours

14.648

### NEW METHOD Duplicating Machine

Chassis components	Hours per unit
Layout and punch template . . . . .	6.00
Panels . . . . .	0.104
Chassis . . . . .	0.289
Side brackets . . . . .	0.010
Resistor board . . . . .	0.050

Total hours

6.453

### How We Beat the Cost Crisis



## Our Duplicator Paid for Itself in Less than a Year

Manhour savings in electronic chassis production recoup a \$10,000 investment. It's another example of how aggressive cost cutting can help you trim unnecessary expense with more efficient production. This article is one of the top entries in the Cost Crisis Awards Competition. Look for another one next week.

**THE JOB:** Produce complex electronic equipment for the nuclear energy industry. A production run of ten identical parts is a long one.

Vernon Brown, plant manager, Radiation Counter Laboratories Inc., Skokie, Ill., says that as part of an over-all cost control program he pinpointed the charges for making electronic chassis, and figured they were excessive.

"We were spending up to 12

hours to make a template. Production time to make an individual chassis ran more than 2½ man-hours."

**The Steps**—Starting with a blueprint, the templatemaker had to layout a drawing of the part on metal, establishing cross lines for hole centers and scribing each circle diameter.

Once the template was drawn on the blued metal, an operator

punched out each hole to size. Where the drawing called for slots, sawing and filing were necessary.

The completed template was clamped to a part blank. Then, on the rotary punching machine, the operator indexed the proper punch and die by hand over the hole to be punched.

Time was lost not only in hand indexing, but in slowly lowering the punch into the template hole to get proper alignment. Templates were gradually nibbled away on the hole edges, and tolerances often varied by as much as 1/32 in. This led to considerable rework during assembly.

**Now**—Starting with the blueprint, the template layoutman marks hole center lines only, and

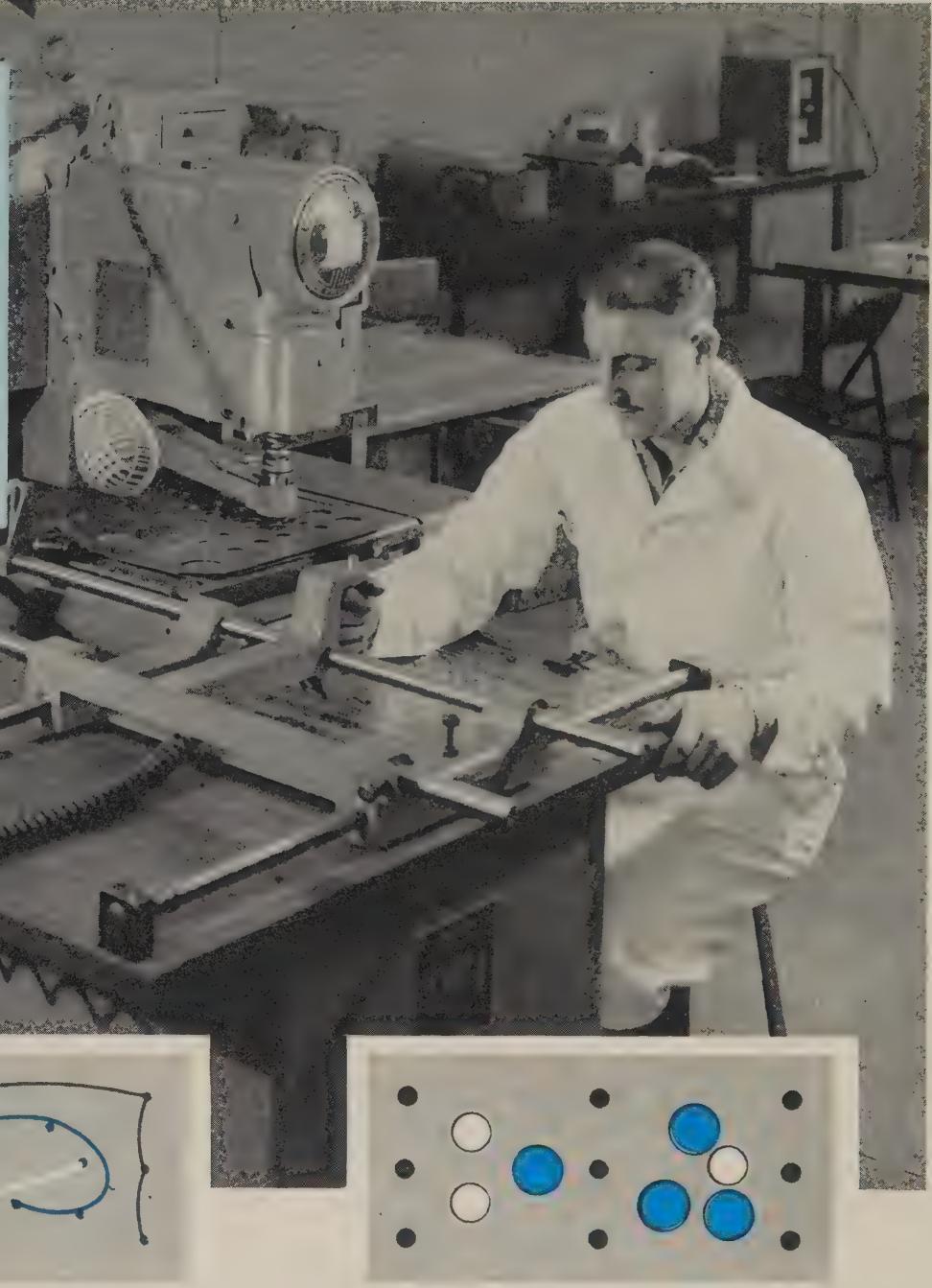
# SAVED:

**2.195 hours**

per set of components

**6 hours**

in template production



Operator traces hole pattern in template with stylus to position the punch. Color code on template (left inset) shows him where to move stylus next. Black holes in part (right inset) are  $\frac{1}{2}$  in., white holes are  $\frac{3}{4}$  in., blue holes are 1 in.

then indicates the hole size. With the new Wales-Strippit fabricator-duplicator, he punches a 3/16-in. hole at each cross line.

Next, each hole on the template is color coded for size—one color for holes that will be  $\frac{1}{2}$  in. in the chassis, a second color for  $\frac{3}{4}$  in., etc. The holes are connected by painted lines of the same color.

The operator clamps the template to the copying table. He inserts the size die and punch he wants in

the machine, and follows the color line with the copy stylus from hole to hole, punching that specific size.

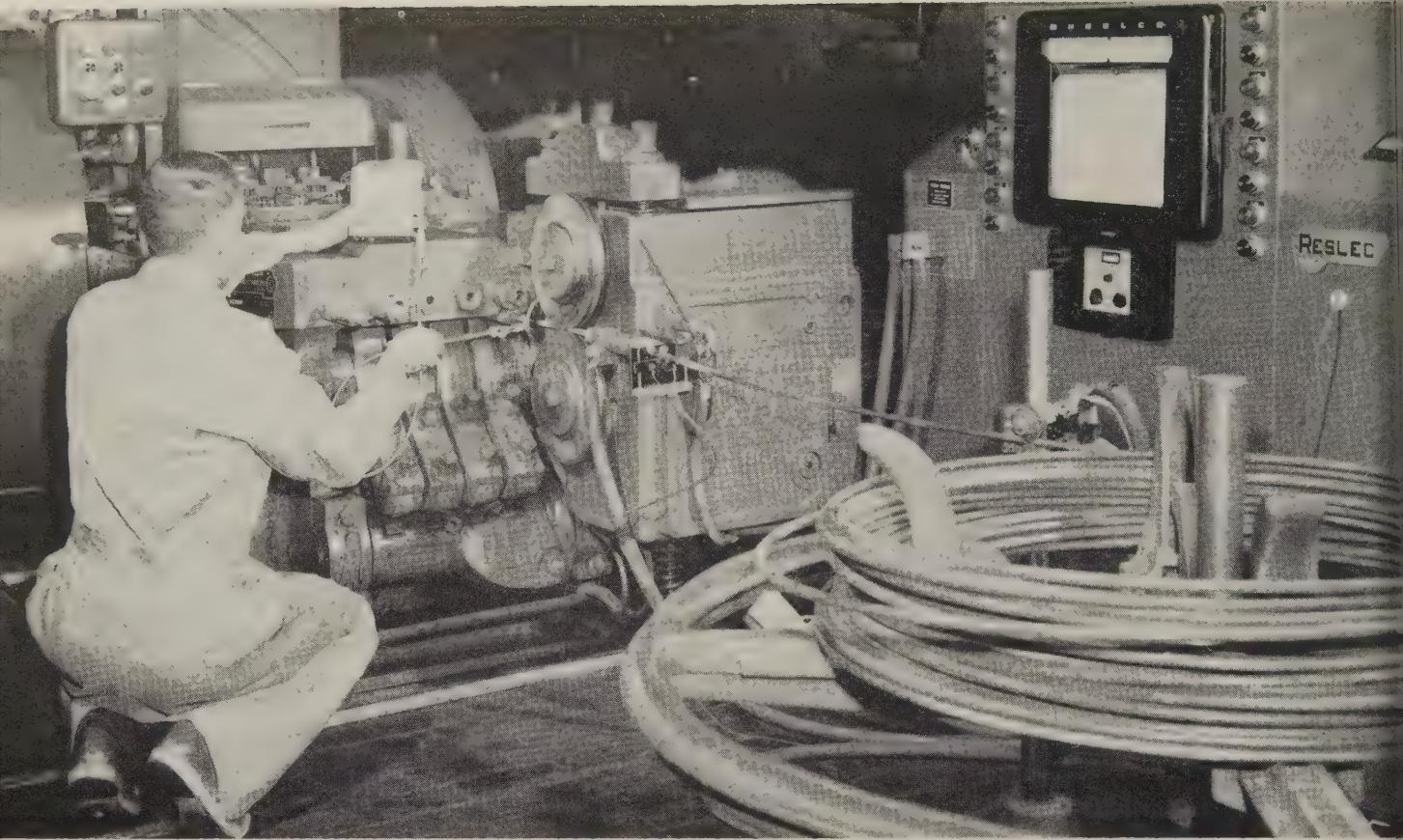
He puts the next size die and punch in the machine and follows a second color route around the template with the stylus.

**Profit** — Selling management on the program, Mr. Brown says he worked up preliminary cost figures to determine the volume of similar units needed as well as total production volume to make investment

in new equipment economical.

"We made a conservative estimate that savings would pay for the cost of the equipment (about \$10,000) in about a year and a half. Further refinements and experience permitted us to realize the savings in less than a year."

In addition, rework was cut because tolerances are held closer. Templates formerly lasted about three months—now they'll last indefinitely.



A research engineer at the National Machinery Co., Tiffin, Ohio, uses a pyrometer to obtain temperature data on heated wire. This is an experimental application of warm heading to a standard 5/16-in. cold forming machine. At the right is a recording type controller, made by Herscott Co., Rockford, Ill., that governs the temperature of the resistance-heated wire

## Warm Heading Tackles Tough Metals

Increasing emphasis on high strength, high temperature materials focuses industry attention on this special purpose technique. Here's report on progress to date

**WARM HEADING** may help solve some of your toughest forming problems. Already in production in a few plants, it is on trial in many more.

The process has an impressive potential; it also has a fair list of problems and an apparently well-defined area of special payoff.

**Where It Works**—The process (it's like cold heading, but the

stock is heated in the range from 200 to about 1000° F) is specialized for tough metals. When you need to upset high-strength and high-temperature alloys, including some stainless steels and titanium, warm heading may be the best practical answer. Many of these metals work harden severely. At elevated temperatures, work hardening is greatly reduced. This may eliminate the

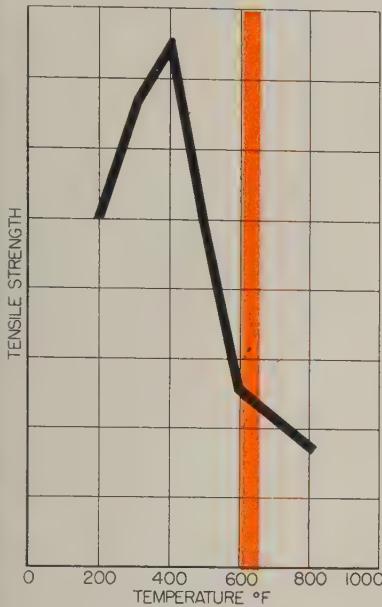
need for annealing after forging.

Other tough metals, like 52100 steel, have high tensile or yield strengths (difficult to move). Proper heating lets you move the metal with less force; it will fill die cavities better. Part finish may improve, and internal stresses will be reduced.

Unlike hot heading, warm heading works below the critical temperature—does not alter the metal's properties.

**Die Life**—With less work hardening, and with lower forces needed to move the metal, die life can be

# Why It Works



This curve is a typical plot of temperature against tensile strength. It shows that the addition of a small quantity of heat increases the strength, and forming would be even more difficult than if it were done cold. Additional heat, however, cuts the strength and would aid forming.

In this case, the optimum temperature range for warm heading is about 550 to 600° F. Below that, there is no significant gain over cold heading. Above 600° F, heat increases bring relatively small gains in formability.

Source: Tocco Div., Ohio Crankshaft Co.

extended. E. A. Channer, vice president, H. M. Harper Co., Morton Grove, Ill., says his company found this true, particularly when warm heading materials with high chrome content. Harper has tried it on a variety of metals, including Discaloy, Refractaloy, A286, and titanium. Warm heading at Harper is done on conventional cold forming machines; the stock is induction heated.

O. L. Ducharme, factory manager, Ferry Cap & Set Screw Co., Cleveland, says that his company, though not in production on warm heading, has tried it on a variety of metals including 1010, 1020, 1038, and 8637.

**Fallacies** — Warm heading has been credited with some advantages that seem destined to fall apart as more is learned.

**Sample:** Warm heading is an over-all improvement on cold heading. (Although it's true that every metal moves easier warm than cold, the added complexity of the setup and cost of the operation will make it a nonessential luxury on materials that are relatively simple to form cold.)

Here's another: Since the metal flows more easily, it will be possible to make bigger upsets in conventional metals on small machines. (Men who have worked with the process claim that if the metal can be cold headed easily, in the long run it is simplest and cheapest to do it that way.)

Some observers speculate that since the material flows more easily and lower forces are required, you can save money by going to cheaper die materials. That, too, is wrong. Higher working temperatures themselves act as a brake on die life. Also, technicians at National Machinery Co., Tiffin, Ohio, (where they have spent more than \$1 million on warm heading basic research) say they have some problems holding the lubricant (copper or lime coating on the stock) in place, particularly at temperatures over 800° F. They have gone to carbide dies for most of their warm heading experiments. Dies at H. M. Harper also have carbide inserts.

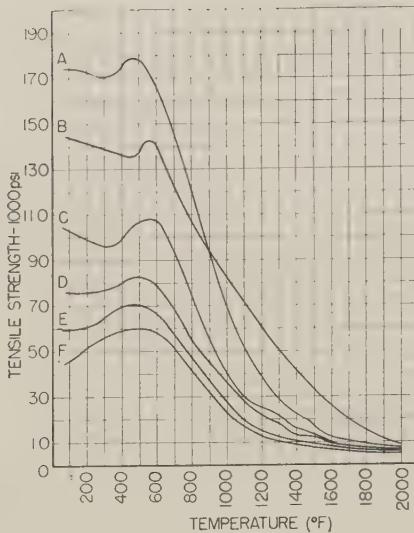
**What Temperature?**—If you use the wrong amount of heat, the result can be disastrous. Since strengths of some materials rise with heats to about 400° F, temperatures must be chosen with utmost care.

## What Temperature Do You Use?

Probably the most critical variable in the warm heading process is the temperature at which the stock is worked. Desirable, or optimum, temperatures for the different metals and part sizes have been arrived at through trial and error, and the data, usually considered proprietary, are closely guarded.

Some of this information is tabulated below. Dr. Harry B. Osborn Jr., Tocco Div., Ohio Crankshaft Co., Cleveland, explains that variance in temperature is caused by the varying stock sizes and different kinds of forming equipment. In specific applications, these temperatures should be used only as starting points.

AISI	Diameter (inches)	Temperature—° F
C 1118 . . . . .	5/8 to 1 1/2 . . . . .	550
C 1137 . . . . .	5/8 . . . . .	700
C 1144 . . . . .	1 to 1 1/4 . . . . .	825
4140 . . . . .	3/4 . . . . .	800
8620 . . . . .	5/8 . . . . .	725
8620 . . . . .	3/4 . . . . .	750
5150 . . . . .	1 . . . . .	800
6150 . . . . .	3/4 . . . . .	825
8640 . . . . .	5/8 . . . . .	800
8640 . . . . .	1/2 . . . . .	750
1040 . . . . .	3/4 . . . . .	700
304 SS . . . . .	0.280 . . . . .	850
304 SS . . . . .	0.340 . . . . .	825
430 SS . . . . .	5/16 . . . . .	450
420 SS . . . . .	1/2 . . . . .	650



These curves, plotted at National Machinery Co., show how temperature affects tensile strengths of several steels. Steel A is 0.40 C, 3.00 Ni, 1.00 Cr; B is 0.40 C, 1.00 Cr, 0.02 V; C is 0.40 C, 3.50 Ni; D is 0.40 C open-hearth steel; E is 0.20 C open-hearth steel; F is wrought iron. Optimum range for warm heading here would be somewhere between 800 and 1000° F.

and controlled accurately. National Machinery's program has tried six different heating types: Vacuum tube induction heating in the 450,000 cycles per second range, motor generator induction in the 10,000 cycles range, gas, radiation heating with Calrod units, high-speed induction (ac and dc), and low-speed induction (ac and dc).

Harry Lange, manager, Cold Heading Machinery Div., Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., says  $\pm 20^{\circ}$  F may make the difference.

Most companies determine the best temperature through trial and error, consider the information proprietary. The table (bottom of Page 115) will give you some starting points.

**How Do You Know?** — Dr. Harry B. Osborn Jr., Tocco Div., Ohio Crankshaft Co., Cleveland, recommends that temperature-tensile curves be plotted for the metals you intend to warm head. (He presented a paper on the subject at the American Society for Metals' Southwestern Metal Exposition & Congress in Dallas.)

He suggests: Use  $\frac{1}{4}$ -in. diameter test bars; induction heat the center portion of the bar in a conven-

tional tensile testing machine, bring the bar to the test heat, reduce power to hold the heat, test as slowly as possible and maintain the temperature within  $\pm 25^{\circ}$  F.

A plot of five tests at well chosen temperatures on a metal should be enough to let you project a curve like those shown. The curve will tell you, probably within 50 to 100° F, the optimum temperature for warm heading. Pick the range at the lower end of the steep slope (shaded area on curve at top of Page 115).

**False Alarm** — First reports on warm heading pictured it as a panacea for most forming problems. National Machinery's experts say it's not. Their work, started in 1923 with the electric header, has proved that most jobs traditionally done cold will continue to be done cold.

One eastern manufacturer says: "After experimenting with warm forging, we feel now that it is not what it was first expected to be."

Others have cooled off on the process, except as a problem solver for the tough alloys and metals. Harper's Mr. Channer says: "The importance of warm heading will vary inversely with the ductility of the workpiece material."

As the aircraft, gas turbine, and other industries reach for higher properties in their materials, warm heading will have an increasingly stronger role to play in the forging business. The more than a dozen companies working with it, in production or in research, have proved it's here to stay.

## Grease Cuts Waste

**Heavier viscosity lubrication on large gears costs less and improves housekeeping, safety**

YOU can eliminate throw-off waste from open gears by using a high tenacity grease.

A rolling mill had trouble with a 10-ft bull gear in its breakdown mill. Aside from wasting grease, it spattered the work area and increased the fire hazard. Costs were excessive: The gear had to be lubricated once a week.

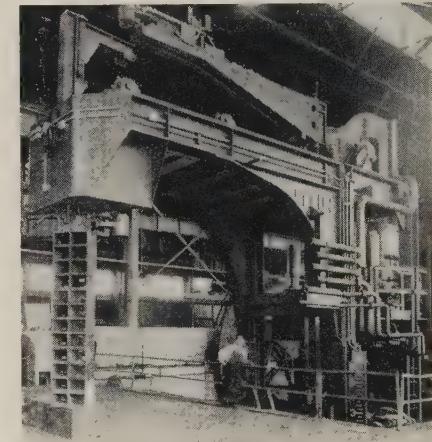
**Solution**—The plant superintendent solved the problem with a light open gear grease (Keystone Lubricating Co., Philadelphia). Throw-

off is eliminated, and maintenance men lubricate only once every six weeks.

After a run of three weeks, the gears are still covered with an excellent protective film. Only a few specks are on the guard. The grease doesn't thin enough to permit capillary attraction to pull it onto the pinion overhang.

**Purpose** — The Keystone grease was developed for open gears in strenuous service. High speeds, pressure, or heat won't thin it out. It is a highly adhesive lubricating film that reduces wear, dampens noise, increases gear life, and lowers power consumption. It resists acids and alkalies, and provides effective lubrication from 40° to 400° F.

## Crane To Serve Converter

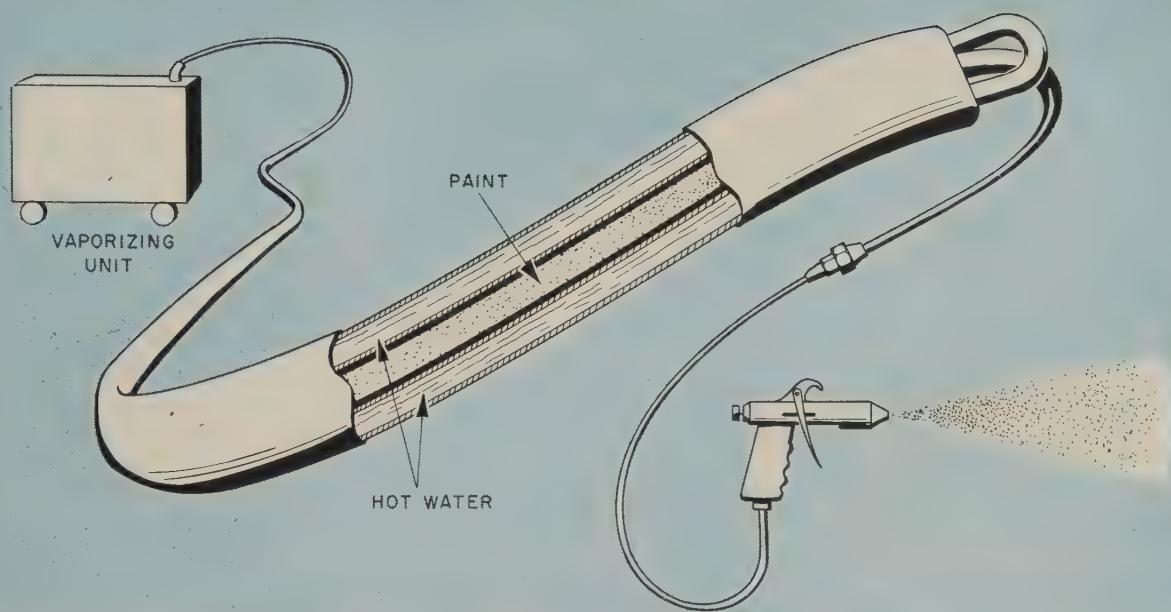


Destined for McLouth

Engineering of oxygen converter shops hasn't settled down to any pattern. The photograph above is evidence of that. It shows a turning crane designed to carry the hood and lance hoist mechanism for an 80-ton capacity oxygen steel converter being installed at McLouth Steel Corp., Trenton, Mich.

Reminiscent of the electrode mast and roof swinging mechanism on an electric furnace, the crane will swing the dust hood and lance out of the way when the vessel is charged or poured. All utilities, such as electric wiring, and piping for oxygen, cooling water, and compressed air, are mounted on the crane.

Pennsylvania Engineering Corp., New Castle, Pa., made the crane. It also built the 35-ton oxygen converters operating at McLouth.



## Hot Lines Keep Paint Fluid

**Heat permits use of long lines for airless painting. Booths are not needed since solvent content is low; paint dries in midair if it doesn't readily find a surface**

CLOGGED hoses have plagued users of airless paint units, forcing them to work with short lines that curtail mobility. The problem has been solved at Douglas Aircraft Co., El Segundo, Calif.

Finishing lines have three channels — two circulate hot water around the third, keeping paint warm and fluid. Pump wear is reduced by using a design with a piston that displaces into a cavity instead of rubbing against cylinder walls.

Paint is pumped into a pair of heat exchangers. Heat and pressure cause the paint to vaporize before entering the lines. It is atomized merely by using a spray gun to release the pressure. The need for

solvents is reduced and defects like orange peel are prevented.

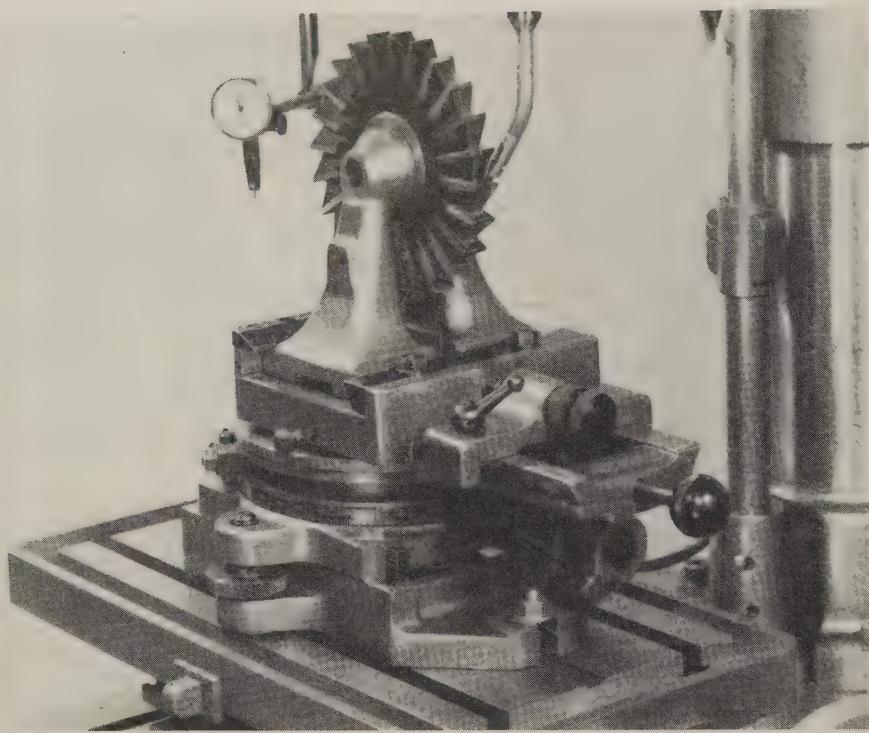
**Other Advantages**—Using the redesigned unit, finishing is two to four times faster than it is with standard spray equipment. It is possible to use longer hoses (up to 150 ft) which reduce setup time for painting large parts (such as major airframe assemblies) and buildings. Hard-to-reach areas are painted without using scaffolds. In some relatively inaccessible areas, operators have painted surfaces 10 ft away from the spray nozzles.

The low solvent content permits buildup of a relatively thick coating in one pass and eliminates the fire hazard of working away from booths.

Virtually no overspray is produced since the atomized coating particles are not carried on expanding air. Reduced quantities of overspray and solvents mean less irritation for the operator's skin and eyes, making working conditions cleaner and more healthful.

**No Overspray Problem**—All types of organic finishes can be applied with the unit, but Douglas is using it mainly where flat mill white is required. Fast drying materials are used. If paint particles don't hit a surface, they dry and lose their tackiness in midair. They are like dust when they come in contact with a solid surface, simplifying the task of cleaning areas where overspray falls.

The unit must be preheated for about 20 minutes before the 150-ft hose will be warm enough to maintain satisfactory coating temperatures. Shorter hoses require less preheating. Pumping solvent through the lines cleans the equipment in about 10 minutes.



A milling cutter is mounted in the Sparcard. Its cutting edges will be given a hard carbide coating



The increased hardness is illustrated by diamond indentations of hardness tests

## Coating Upgrades Low Cost Tools

Tungsten carbide is deposited by a process that is the opposite of spark erosion. Surfaces have satin finish. Shallow craters are lined with the hard electrode metal

SPARK DEPOSITION is being used to put tungsten carbide on the surfaces of low cost, high speed cutting tools. The process was developed by Impregnated Diamond Products Ltd., Gloucester, England. Its machine (Sparcard) is distributed in the U. S. by Easco Products Div., Electro Arc Sales Co., Ypsilanti, Mich.

Used at Point of Wear—The coating is applied to the tool surface that is subject to the greatest wear—generally the top rake. The fine layer of material transferred from the electrode is harder than the tool material.

The treated surface resembles that produced by spark machining. It has shallow cratering and a satin finish. The craters are lined with hard electrode metal. Hardening penetrates the subsurface of the treated metal. Photomicrographs show that a sandwich effect is produced: The surface and immediate subsurface are hardened. A soft zone is between them and the parent metal.

The main differences between this process and spark erosion are in the circuitry and the replacement of the servofeed with a vibrator, which holds the electrode.

Coating a Part—Before treatment, a tool must be ground and free from oil, grease, and dirt. It is placed in the holder and brought close to the electrode. A micrometer setting controls the vibrator head and can adjust for irregularities in the tool surface.

When the vibrator and current are turned on, the spark discharge (derived from a direct current source) spans the air gap between the electrode and the work. It is controlled by condenser banks that are designed to yield four types of surface finish as the electrode traverses the surface of the tool.

A compound table supports the work. It has longitudinal movement of 12 in. and transverse motion of 6½ in. A universal toolholder adapts to single point tools, reamers, and milling cutters up to 8 in. in diameter.

# HARBISON-WALKER FORSTERITE L CHECKERS LIKE NEW AFTER 1105 HEATS!

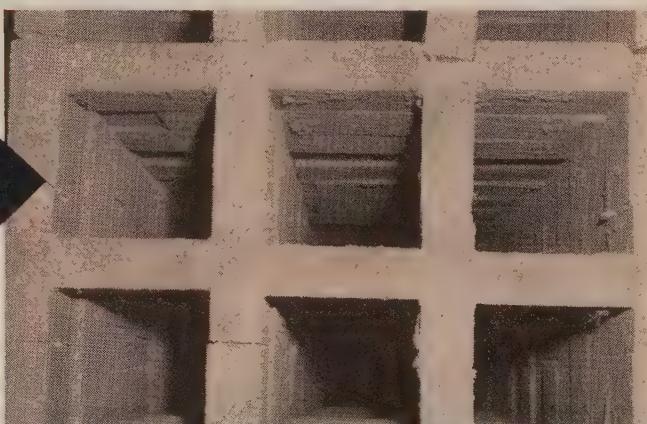
AFTER THE FIRST TWO CAMPAIGNS—378 HEATS the Forsterite L Open Hearth checkers looked like this—

The friable character of the slight dust build-up is evident in this photograph.



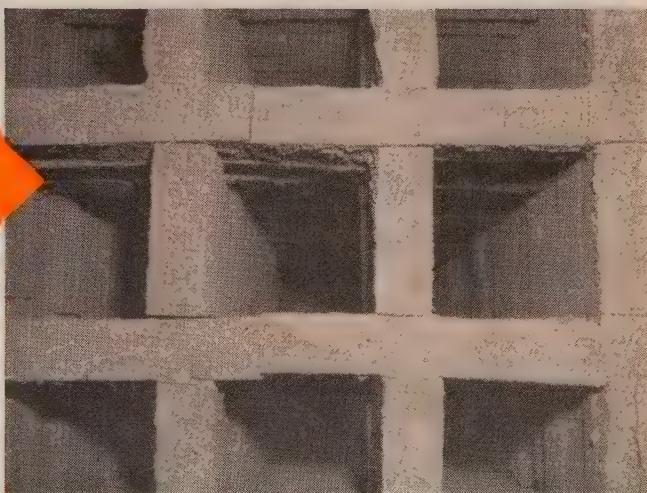
CLEANED AND READY TO GO BACK INTO SERVICE they looked like this—

Cleaning is quickly and easily accomplished because Forsterite L Checkers resist slagging, spalling and clogging.



AFTER 1105 HEATS—  
cleaned and ready for more service—they still look like new!

The amazing durability of this magnesium-silicate refractory brick is clearly shown by the pictures. Furthermore, the mineral forsterite has inherent properties which give the checkers exceptionally high heat capacity. The results are longer life, easier and less frequent cleaning, and greater thermal efficiency of the checker settings.

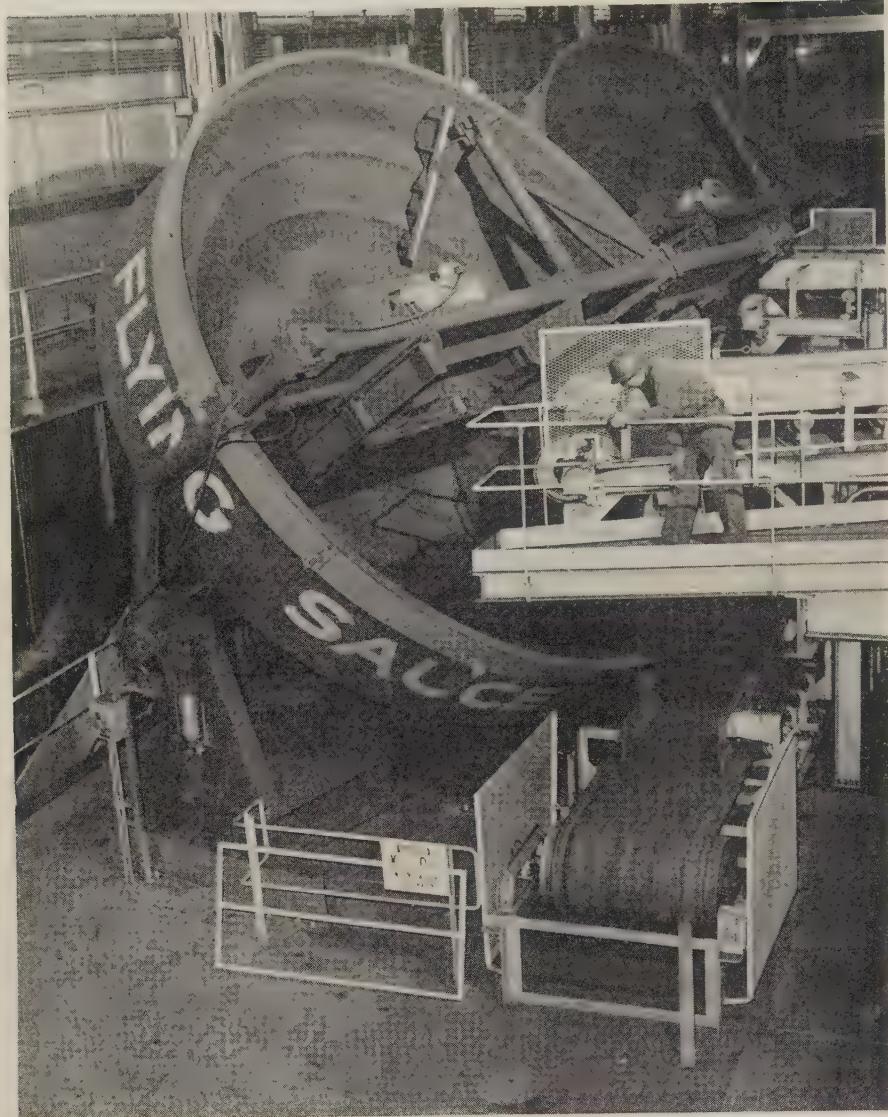


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## PROGRESS IN STEELMAKING



Emphasis is placed on material mixing in U. S. Steel's new sintering plant at Youngstown. For mixing and pelletizing, two Flying Saucers (18-ft rotating dishes) are used

## Mix Is Key to Better Sinter

If you want high quality, give more attention to material preparation, says Dwight-Lloyd Div., McDowell Co. Inc., builder of Youngstown sintering plant for U. S. Steel

WITH blast furnace operators everywhere acknowledging the value of beneficiated burdens, the demand is strong for better burden components, especially sinter.

The Dwight-Lloyd Div. of McDowell Co. Inc., Cleveland, which

engineered and built the new 5000-ton-a-day sintering plant at U. S. Steel Corp.'s Ohio Works, Youngstown, says, "Far and away the most significant refinement of today's continuous sintering is related to raw material preparation. This

parallels beneficiation of material for blast furnace charging."

Personnel of the Dwight-Lloyd Research Laboratories in Cleveland declare that quality of sinter depends on quality of the mix.

**Requirements** — For consistently efficient sintering, fuel content, moisture, and bed permeability must be uniform, they say.

Many ingredients, having various physical properties, may make up the charge burden for a typical ferrous sintering plant. Those might be ores of varying sizes and moisture contents, dry blast furnace flue dust, sinter machine exhaust dust, dry granular returns—cellular in texture and varying in temperature, sticky iron-bearing sludges, and damp granular coke breeze. "It is important," the McDowell people say, "to proportion and blend these constituents into a homogeneous, porous burden for the sinter machine."

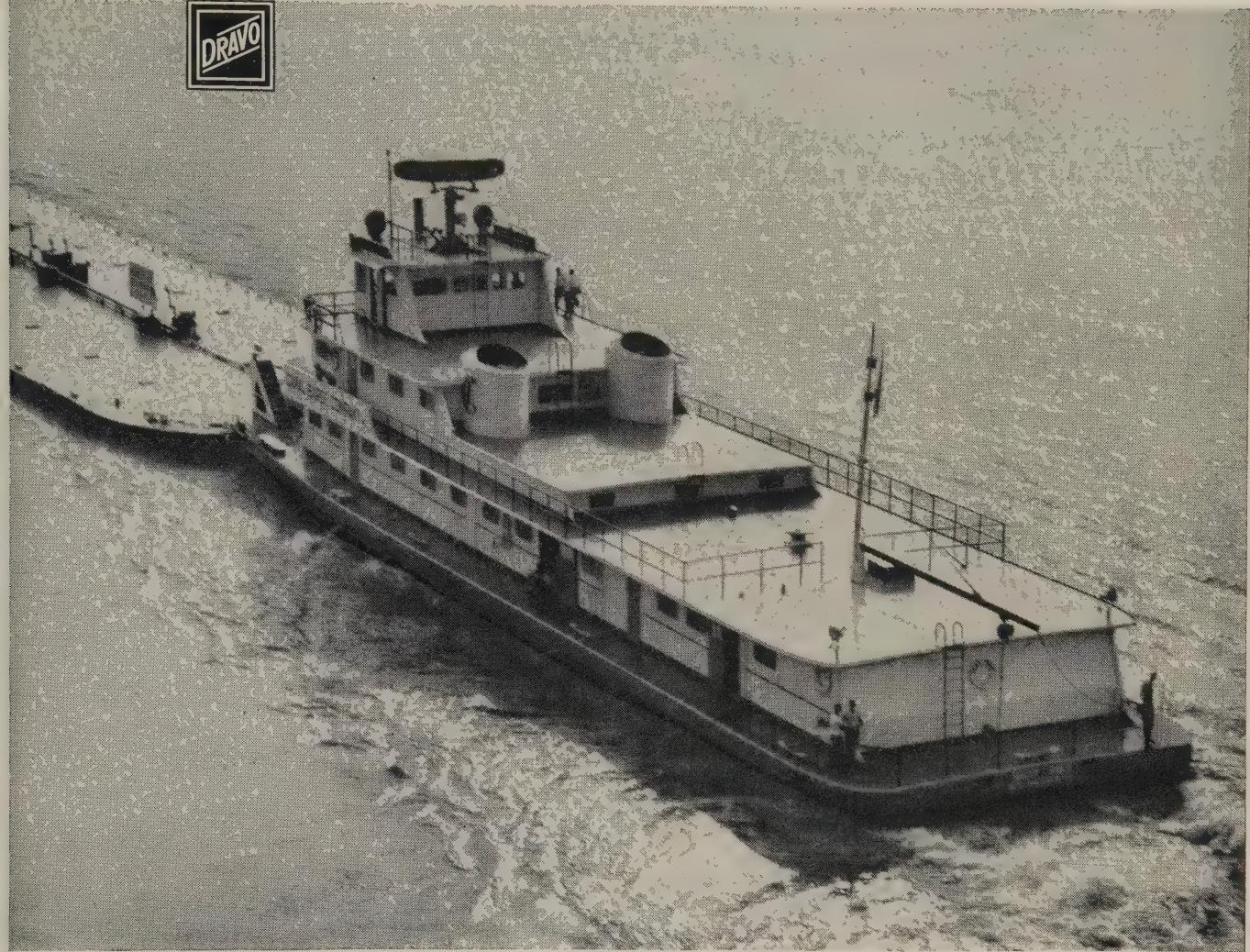
**Two Mixers**—To achieve the kind of a mix deemed necessary, the new Youngstown plant has two McDowell-developed Flying Saucers. Each is an 18-ft rotating and inclined saucer-shaped device that gives a turbulent backmixing action and forms the powdered ore and fuel into small pellets ready for sintering. Each of the saucers has a rated mixing capacity of 4850 tons a day.

Before the pellets drop onto a continuous, traveling sintering line 168 ft long (over windboxes) and 8 ft wide (inside pallets), a 1½-in. hearth layer of nut-sized sinter is deposited on the grates. This layer insulates the grate bars against high temperatures, acts as a filter to inhibit trickling of burden or plugging of grate bar apertures, and causes sinter cake to be discharged readily from the grates when the end of the sintering line is reached.

Before the use of a hearth layer, sinter cake had to be jarred loose from the discharge end of old machines. This caused the machines to jerk.

**Big User of Air**—After being ignited by a stationary furnace using 36,000 cu ft of natural gas an hour, the bed (with a maximum depth of 18 in.) passes over 21 windboxes that pull 390,000 cu ft of air a minute downward through the mass to accelerate the fusing of iron particles.

Upon leaving the sintering ma-



## New high speed towboat... has power, will travel

The *Sally Polk*, first of the new Dravo-3200 towboats, was clocked at an average speed of 12.9 m.p.h. in trial runs with an 8500-ton petroleum tow. She is now in the New Orleans-St. Louis service of Canal Barge Company, Inc.

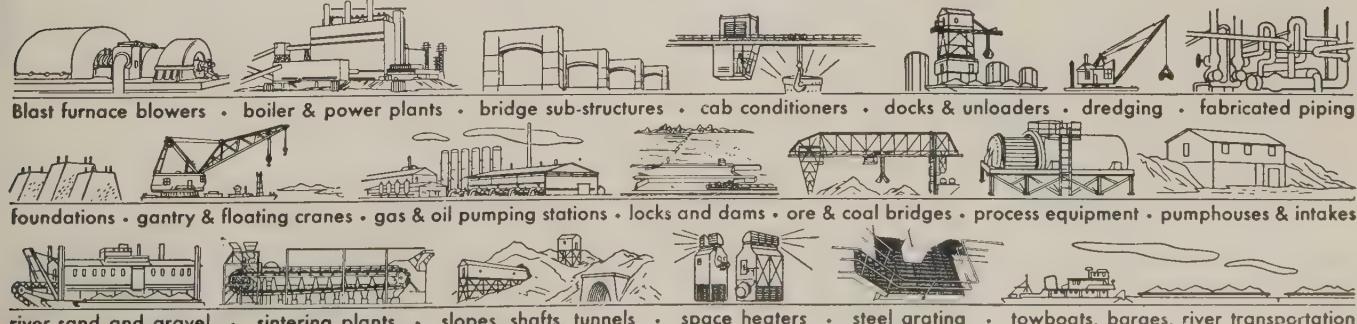
Another of these high speed 3200 horsepower towboats, the *Crescent City*, has joined the fleet of Sioux City & New Orleans Barge Line,

Inc. Design features developed by Dravo during model basin tests in the Netherlands give the "3200" greater pushpower than other towboats of equal size and power.

A third Dravo-3200 is available for late spring delivery.

For more information on Dravo-3200 towboats, or other products and services, write DRAVO CORPORATION, PITTSBURGH 25, PA.

**DRAVO**  
CORPORATION



## BETTER SINTER . . .

chine, the hot sinter goes into a Dwight-Lloyd straight-line-type cooler where temperature of the material is lowered from 1100° F to around 250° F within 235 ft. The cooler has an active area of 2350 sq ft, compared with 1344 sq ft in the active hearth area.

Sinter cooling is of critical importance to the physical character of the finished product. Rapid cooling, say Dwight-Lloyd engineers, results in a strained, friable sinter which crumbles during subsequent handling.

Partial cooling is accomplished on the machine during the process. As the pallets progress across the machine, the ignition zone, which begins on the surface of the bed, gradually burns down through to the bottom of the bed. At the end of the machine, the top portion is completely sintered and has been draft cooled. The bottom portion is completely sintered but is still red hot.

**Air Is Best**—Forced air is used in the sinter cooler. Cooling with forced air is desirable, say the Dwight-Lloyd people, in that it results in a strong product which is easily handled on conventional rubber belt conveyors.

To prevent air pollution and to recover dust for re-use, the plant has an electrostatic precipitator which has an efficiency rating of 97.2 per cent.

Color dynamics have been used inside the plant to mark piping, to promote safety, and to encourage good housekeeping. As a further measure toward safety, metal guards have been placed on all potential danger spots around the machinery.

**Central Control**—All of the sinter plant's equipment is operated from an air-conditioned central control room, where television and many electronic signal switches help the operator keep watch.

Running through the plant are nine major flow lines: Incoming ore, flue dust, fuel, rubble, hearth layer, hot returns, cold returns, dust, and sinter product. The entire system is kept functioning by proportioning belt conveyor scales combined with control devices.

Total length of the conveyors is 8265 ft (3765 ft in the sinter plant and 4500 ft in the screening plant and ore yard system).

## Bureau Speeds Sampling

Data processing equipment at the National Bureau of Standards is providing almost immediate information on the uniformity of metals and alloys. It obtains analyses on a direct-reading spectrometer and automatically records them on punched cards which are processed by an electronic computer.

The system is used to prepare standard samples which the Bureau distributes for the calibration of spectrometers in other laboratories. (It issues over 550 different standard samples of chemicals, metals, ores, and ceramics.)

Requests from industry indicate a need for many more samples. Uniform composition is becoming increasingly important.

**Equipment** — The spectrometer and electronic readout were designed and built by Baird-Atomic Inc., Cambridge, Mass. It provides for analysis of 36 chemical elements, 18 of which may be observed simultaneously.

Operation is fully automatic once the operator has placed the sample in the spectrometer and pushed the starting button. Spectral exposure is made in 30 seconds; the measurements of spectral line intensities are read into the storage unit in 5 seconds and are punched in a card 5 seconds later.

In 3 minutes, the 500 or more measurements for the 18 elements are converted to percentage concentration. Only 7 minutes later, the statistical analysis of the data is completed and the results typed out in convenient form.

## Coating Ups Shaft Life

Flame plating has solved a major wear problem on turbineshafts used in the engines that power the Atlas, Thor, and Jupiter missiles.

Engineers at Rocketdyne, a division of North American Aviation Inc., flame plate the shaft with tungsten carbide, then grind and lap the coating to a 0.0015 to 0.0025 in. thickness and a 4 microinch finish. The use of flame plating produces over a 5000-second life of the shaft under severe operating conditions.

Flame plating is a process developed by Linde Co., division of Union Carbide Corp., New York.

## How to measure

*Now is the time  
to take a  
long, hard look*

A continuous furnace is more than just a brick-lined structure built to heat a material; it is a processing tool.

Like all processing tools, it must be evaluated on an overall basis. Fuel consumption and efficiency may be completely outweighed by many more-important economic factors centering around your workpiece, your total production program, and your work force.

Your evaluation may well prove that an investment now in Selas continuous heat processing will bring immediate returns in reduced costs and improved product quality.

To help you take this long, hard look at your heat processing equipment or requirements, Selas offers these 15 evaluation factors:

- **Labor requirements**
- **Material saving**
- **Material handling**
- **Floor space**
- **Process coordination**
- **Temperature control**
- **Fuel efficiency**
- **Product value**
- **Equipment flexibility**
- **Automatic operation**
- **Product quality**
- **Production requirements**
- **Work in process**
- **Human element**
- **Maintenance**

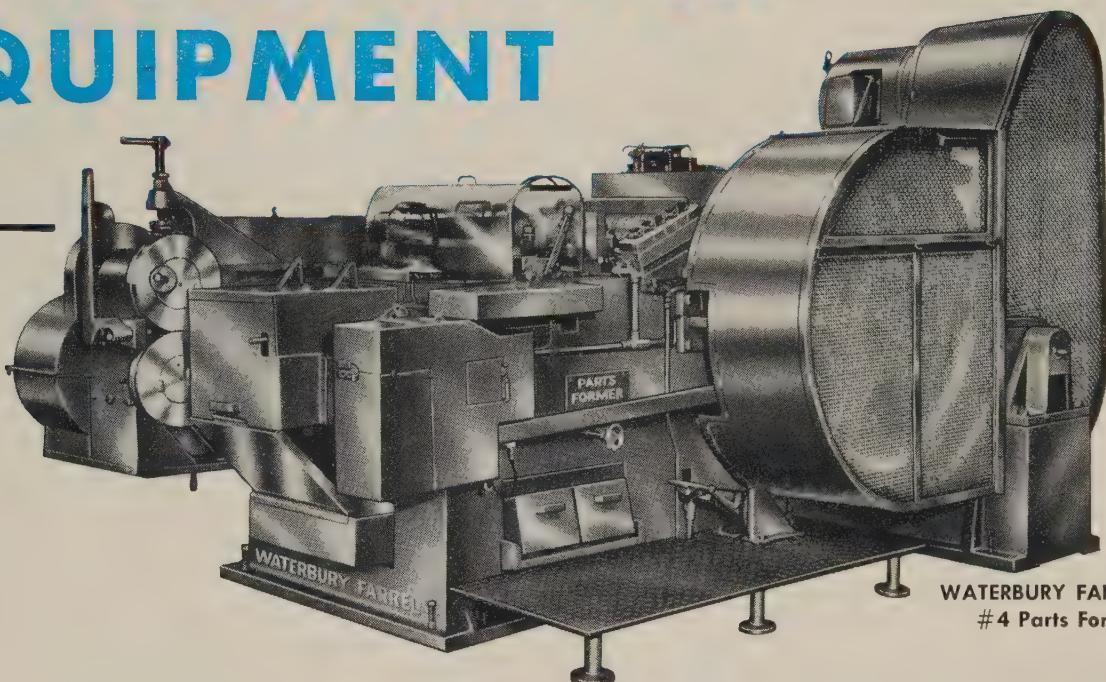
The factual report on the facing page tells how a manufacturer of air conditioners took this long, hard look at return-bend brazing. Every evaluation factor proved important; reduced labor requirements alone paid for the Selas automatic brazing machine in 3½ months.



# PARTS FORMING

## WATERBURY FARREL

### COLD HEADING EQUIPMENT



WATERBURY FARREL  
#4 Parts Former

Move metal into the shape you want instead of removing it. That's the basic concept and advantage of Waterbury Farrel parts-forming equipment.

At the upper left are a few examples of the tremendous variety of parts which can be formed from round wire by the Parts Former or by related Waterbury Farrel cold heading equipment. These machines have already been thoroughly proven in production. In fact, many metalworking plants are now deriving the

benefit of better, lower cost parts production by Waterbury Farrel machines.

As the pioneer in cold forming, Waterbury Farrel knows what this process can do for you. Our engineering staff will be glad to investigate with you the possibilities of cold forming your product. Contact our nearest office or bring your samples and specifications directly to our plant.

Other Waterbury Farrel Cold Heading and Auxiliary Equipment Includes Two Blow and Progressive Headers, also Custom Designed Cold Heading Equipment • Nut Machines • Pointers • Slotters • Thread Rollers and Trimmers.

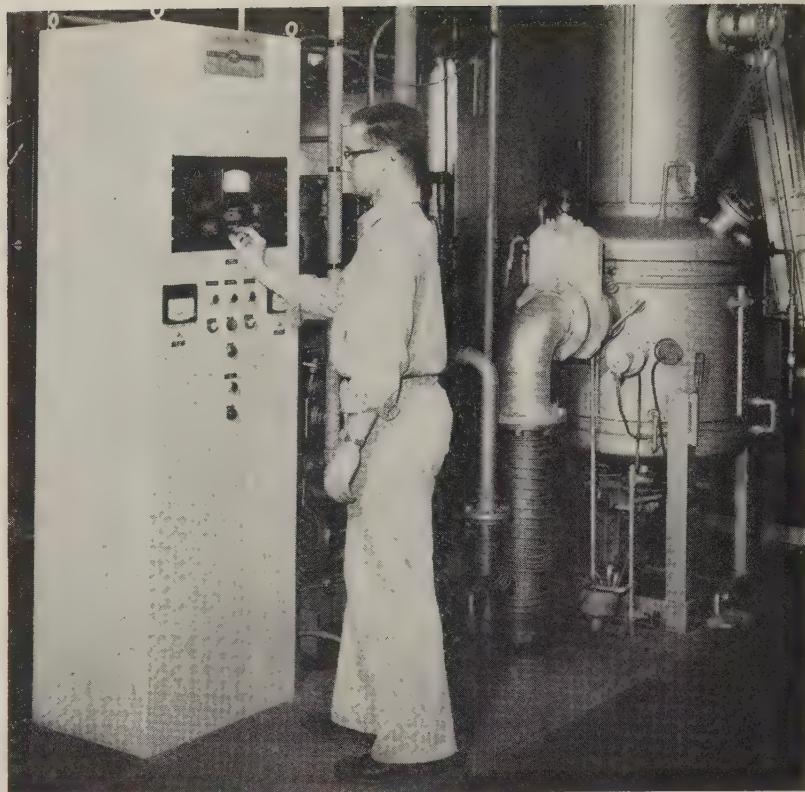
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**Secret of C. I. Hayes's high temperature design is molybdenum element (center) and concentric radiation shields (three molybdenum; two outer ones, a high nickel alloy). Operator (right) adjusts vacuum pump controls**

## Furnace Speeds Vacuum Treating

New design features novel heating element and eliminates refractories for faster cooling. Maker says it's a practical production tool that can cut costs

HOW can you get high production out of vacuum heat treating equipment?

C. I. Hayes Inc., Cranston, R. I., says it has the answer in a new furnace design. It promises:

- Fast heating and cooling. (Work can be brought to 3000° F and cooled to 700° F in 1 hour.)
- Fast multiple treatments without removing work from the furnace. (For example, a jet engine alloy can be brazed at 2150° F, diffused at

2050° F, and annealed at 2250° F with almost immediate temperature shifts.)

- Molybdenum sintering at 2800° F.

**Overcomes Limitations** — Hayes engineers wanted to eliminate these problems usually associated with vacuum equipment: Slow heating and cooling; high voltage losses; high maintenance costs; and an upper heating limit thought by many to be around 2175° F.

To do it, they excluded refracto-

ries, made the heating element light and self-supporting, and employed high amperage at only 8 volts.

Five concentric radiation shields keep the heat where it belongs. Chamber walls are water cooled to lower room temperature and speed cooling.

**Operation Explained** — The top half of the furnace is raised hydraulically and swung to one side. The five-section radiation cover and the workbasket or fixture are attached to the lift hook and raised into the top half. The cover is swung back and lowered onto a Neoprene O-ring seal lubricated with a silicone grease. The load is then lowered and guided into position at the cen-



Top swings for loading and unloading. It is raised hydraulically from bottom shell which holds heating element

er of the heating chamber.

The Hayes design uses a vacuum pumping system based on standards set by the Consolidated Electro-Dynamics Corp., Rochester, N. Y. When the load is in place, a mechanical roughing pump pulls pressure down to 100 microns.

A booster and a diffusion pump then reduce that to a full vacuum in 15 minutes. A low blankoff pressure permits a vacuum of 0.1 micron. Leakage rate is held to about one thousandth of a cubic inch every 4 seconds.

After treatment, the work is raised to the cooling chamber directly above the heating elements. Water jacketing speeds heat removal.

**More Practical**—Much past vacuum practice, say Hayes engineers, used hot-wall design and an inner retort to contain the vacuum. But most metals can't hold the pressure above 2100° F. Cold-wall design keeps metal closer to room temperatures and there is no retort.

The three-legged heating element replaces refractory-supported coils which frequently short out from condensed metals sublimed at high temperatures in the vacuum. The element is easily changed—you don't have to disconnect gasketed, water-cooled leads.



## FASTENERS COST MONEY!

... BIG MONEY! Last year industry spent over \$200,000,000 outright for fasteners. And many hidden factors in fastener selection affect production, assembly and maintenance costs! That's why design engineers recognize Chandler as leading manufacturers of dependable "AN", "NAS", "MS" and special bolts. Made from high carbon, alloy, super-alloy and stainless steels, cold-forged Chandler fasteners are precision engineered, produced to close tolerances and constantly inspected to assure maximum resistance to stress, shear, vibration. For quality fasteners mass-produced at a realistic price to meet your special requirements, specify Chandler fasteners by name. Write today for complete information.



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# J&L Uses Computer

Analog is new tool for research and experimentation with steel-making problems



Purchased castings like these are sanded and ground by the company's operators. Dust, formerly exhausted to open air, now passes into a collection unit outside the building

## Machine Solves Dust Problem

A central dust collector not only eliminated a housekeeping problem, it improved production through better working conditions. Employees no longer need masks

SMALL plants can handle dust problems efficiently if they will follow the example of William Wilson's Sons Inc., Lansdale, Pa.

**Solution**—The key is a small, self-contained dust collector. (Pangborn Corp., Hagerstown, Md., makes such devices.) One, called Ventrijet, eliminated the problem for Wilson. Here's how it works.

Dusty air passes through machine hoods at 2000 cfm. As it travels through venturi tubes, it is mixed with small particles of water. The mixture of air and dust impinges at high velocity against surface plates which collect sludge. Deposits wash down into a tank and settle for periodic removal.

Water not removed by the im-

pingement plates deposits on baffles in an eliminator section and drains back into the tank. Only clean air is discharged.

**Product**—Wilson makes gasoline, kerosine, and oil pumps for truck firms, taxi fleets, farms, and industrial firms. They deliver and record liquids the same way as conventional gas pumps at filling stations. (But they don't record the price.)

All castings in the pumps are purchased. The company machines and finishes them. Cast iron and aluminum particles from two belt sanders and a vertical wheel grinder used to be exhausted outside the plant. They made a mess that upped housekeeping costs. Operators also had to wear masks.

COMPLICATED metallurgical and mechanical processes are simulated on a computer at Jones & Laughlin Steel Corp., Pittsburgh.

The analog is being used to study process control, analyze automatic control systems, and revise information handling and data collection techniques.

The computer is a combination of mathematical analysis and pilot plant study of processes.

**Solving a Problem**—Equations describing the problem are wired into the computer, using plug-in circuit elements. Potentiometer dials regulate values of the variables. This makes it possible to analyze the influence of one or several changes.

In the simulation of a process, the computer acts like a pilot plant. Data from processes are used to establish a model on the machine. Extreme conditions which might cause serious upsets in production, yield, or quality are studied without interrupting an operating process and avoiding the costly difficulties of upsetting production.

The computer changes variables through thousands of possible combinations in a few hours. The answer is produced in graph form, providing permanent and easy-to-read answers.



The computer produces answers in the form of graphs

# Master Key...

TO POWER'S  
LOW COST FUTURE

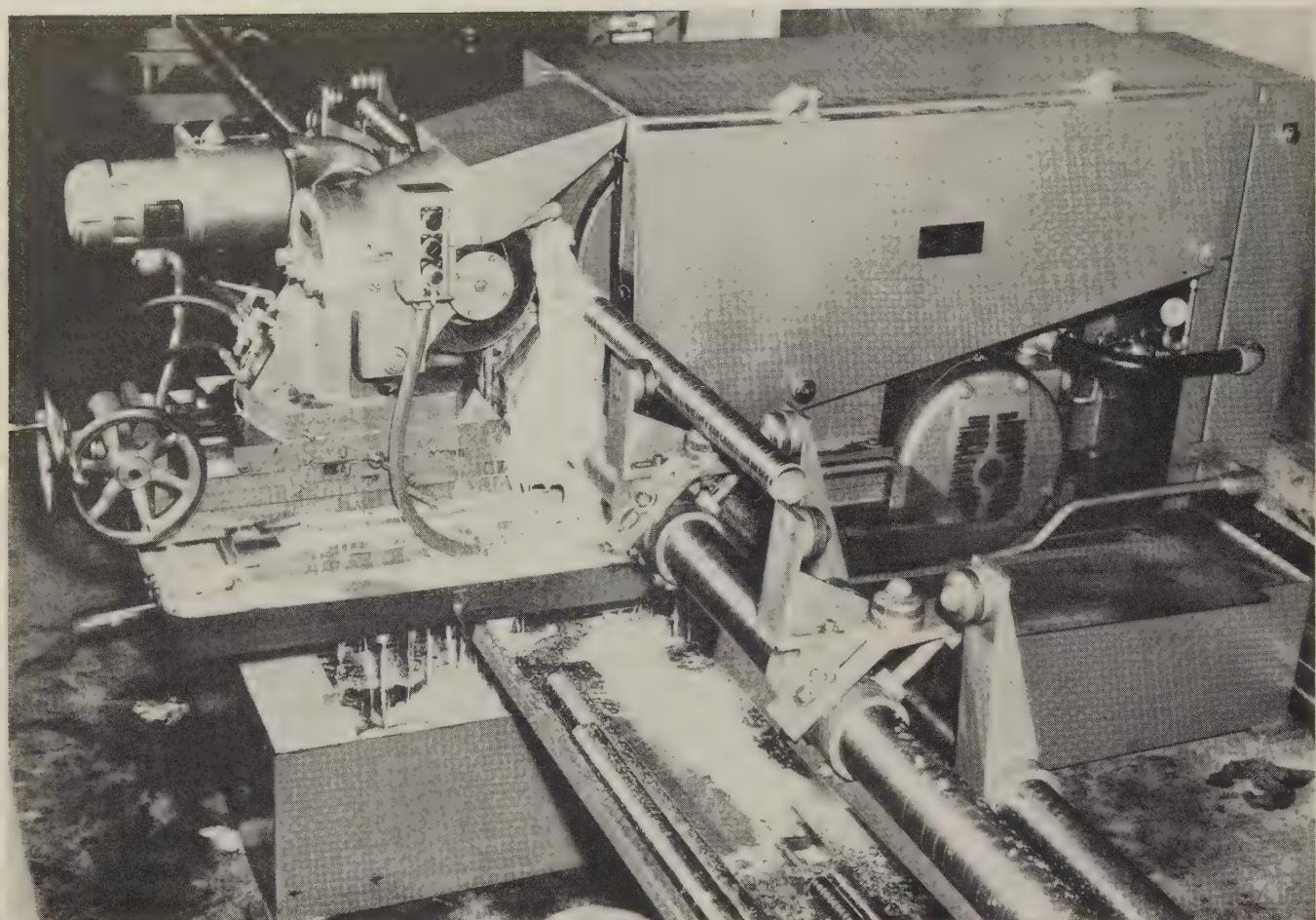
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Bar stock up to 25 ft long and 7 in. in diameter is handled in a centerless belt grinder

## New Jobs for Belt Grinders

Multiple head machines and conveyor feeding open up many opportunities to combine steps in single operation. Advances in fixtures also add to versatility

ABRASIVE BELT GRINDERS size and accurately finish products ranging from screw drivers to atomic fuel elements. The relatively new machining method offers burr-free cutting action, speed, accuracy, and adaptability. Examples:

- An annual saving of 8000 man-hours is realized by using an automatic grinder for the six grinding and finishing operations on tab and margin racks of typewriters.

- A tolerance of 0.001 in. is maintained while removing 0.005 in. of tool steel from chain saw bars at the rate of 10 ft a minute.

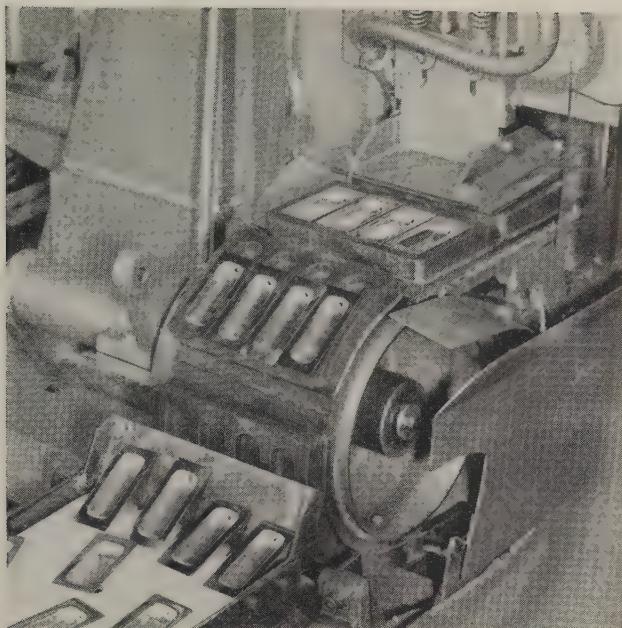
- Over 1000 socket wrenches an hour are sized and finished by removing 0.004 in. in a single pass.

Recent Improvements—Multiple head grinders with conveyor feeding have been an important development. Conveyor feeds eliminate loading and unloading deadtime.

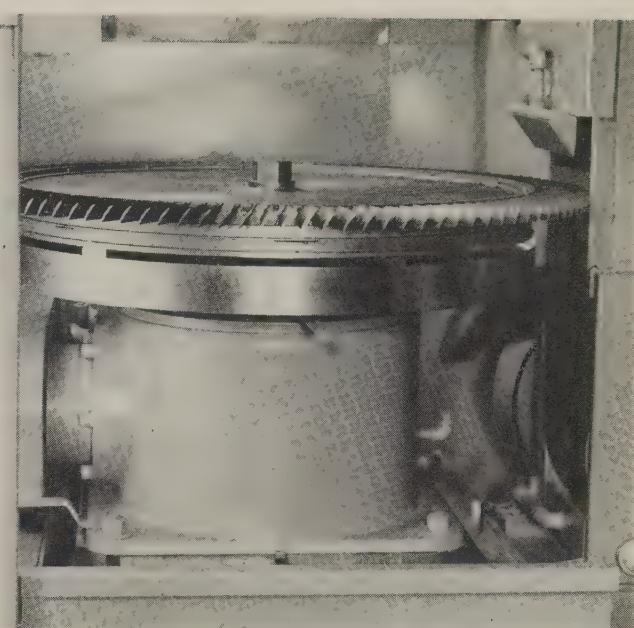
Parts are carried under a series of heads, doing six or more operations in one pass. An unmachined part can be ground to a fine finish in one operation by using progressively finer grits. For operations demanding exceptionally heavy stock removal, identical belts increase production rates.

Belt machines use centerless and surface grinding methods. The free cutting action of the abrasive belt makes it a natural for working fragile parts.

Key to New Uses—Improved design of fixtures is essential to capitalizing on the production and application potential of abrasive belt



Neoprene blocks cemented to the belt make the conveyor serve as a fixture



A rotary table holds jet engine compressor blades as they pass across the face of the belt

grinders, states John Simmons, product manager of Engelberg-Huller Co. Inc., Syracuse, N. Y.

A conveyor can be used as a fixture. A hardware manufacturer cemented Neoprene blocks to the conveyor of a two-head belt grinder used to face brass escutcheon plates.

At International Business Machines Corp., the parts are stacked in a gravity feed rack and an oscillating feed bar pushes them, one at a time, onto the belt grinder's conveyor. The grinder removes excess flash from moldings of beryllium-copper stator components for electric accounting machines.

In the production of jet aircraft rotors at Solar Aircraft Co., San Diego, Calif., a revolving table moves the workpiece against the abrasive belt. Parts are moved back and forth across the belt face by an air-hydraulic device, removing as much as 0.5 in. Belt speed ranges from 2000 to 5000 ft a minute.

**Speed Means Savings**—A machine for grinding and finishing screw driver blades has upped production 50 per cent by eliminating four machining operations. It has seven grinding heads and a rotary chain drive fixture with 20 chucks. One complete cycle (20 blades through seven operations) takes only 90 seconds.

The grinder for typewriter racks,

mentioned earlier, uses four grinding heads mounted in vertical and horizontal sequence, followed by two wire brush heads. Parts are fed at 5 to 30 ft a minute. An air-operated stacking device provides automatic unloading. The racks are made by International Business Machines Corp.

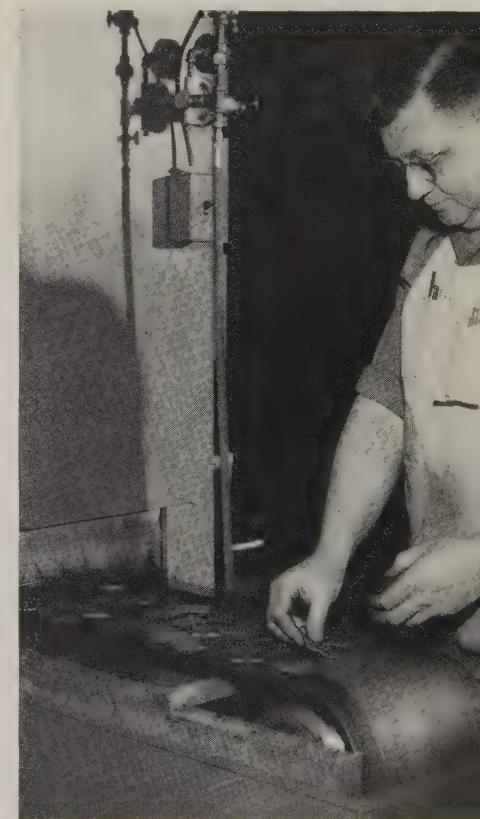
**Grinding for Accuracy**—Bent, burned, and scored blades for jet engine compressor rotors are ground to a tip-to-tip outside diameter tolerance of  $\pm 0.00125$  in. with about 0.008 in. removal. A rotary table holds workpieces 28 to 48 in. in diameter.

An 8 by 132 in. abrasive belt removes 0.012 in. from automotive countershafts. The finish grind removes an additional 0.002 in. with tolerances of 0.0005 in. total indicator reading. The workpiece moves 7 ft a minute. A reverse feed mechanism allows progressive passes in either direction without intermediate material handling.

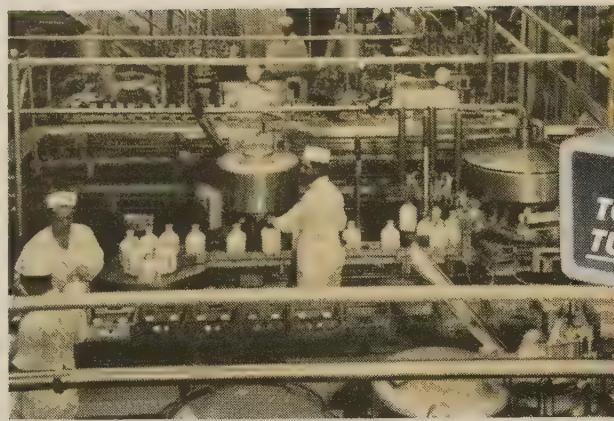
**Belts Have Soft Touch**—A resilient abrasive belt and a rubber backup wheel have a shock absorbing quality that eliminates breakage. The combination is used by General Electric Co., Schenectady, N. Y., to machine extremely brittle atomic fuel elements.

They must be accurately sized to have the proper clearance to move

through feeding tubes of reactors. After molding and sintering, uranium dioxide slugs are normally bowed and out of round. They are sized in a centerless grinder, removing 0.003 in. with an accuracy of  $\pm 0.0005$  in.

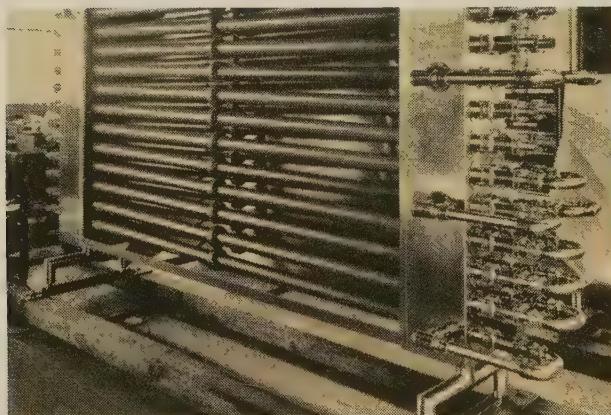


Parts are held in place by a magnetic plate under the belt

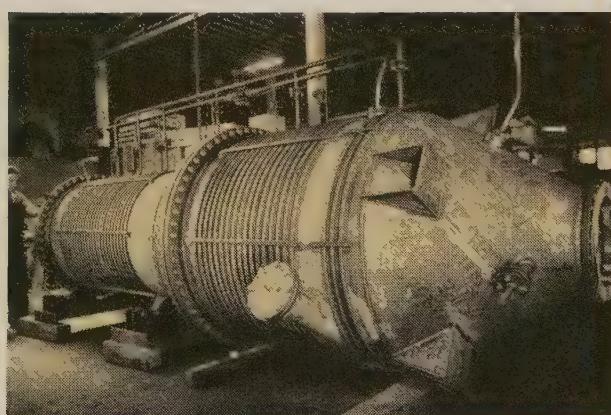


IT'S TIME...  
TO DESIGN WITH  
TUBING IN MIND

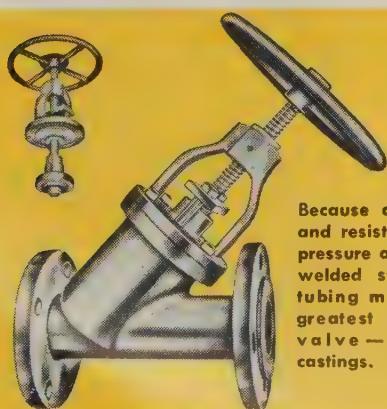
In dairy products, sanitation, non-contamination, heat and cold requirements dictate welded stainless steel tubing.



The uniformity, concentricity and dimensional accuracy, and easy fabrication of welded tubing serve best in this condenser.



This all-stainless steel resin distillation unit relies on welded stainless steel tubing for all tubular components.



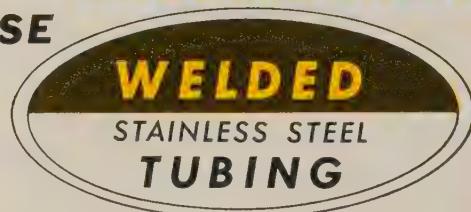
Because of formability and resistance to heat, pressure and corrosion, welded stainless steel tubing makes up the greatest part of this valve — eliminates castings.



## WHEN YOU MUST COMBAT

- CORROSION
- HEAT
- CONTAMINATION

USE



Where corrosion means contamination or failure—where instant sanitation is a must—where temperatures and pressures combine as key factors—where lifetime beauty and durability spell economy—use *welded stainless steel tubing*.

In all these applications for tubing, the uniformity, concentricity, dimensional accuracy and wide range of sizes, shapes and grades of *welded stainless steel tubing* serve best.

It's time to design with tubing from your quality *welded tube producer*.

### COMPLIMENTARY TECHNICAL HANDBOOK

260 fact-packed pages of design data for Welded Steel Tubing. For your copy write on your company letterhead and give your title.



FORMED STEEL  
TUBE INSTITUTE

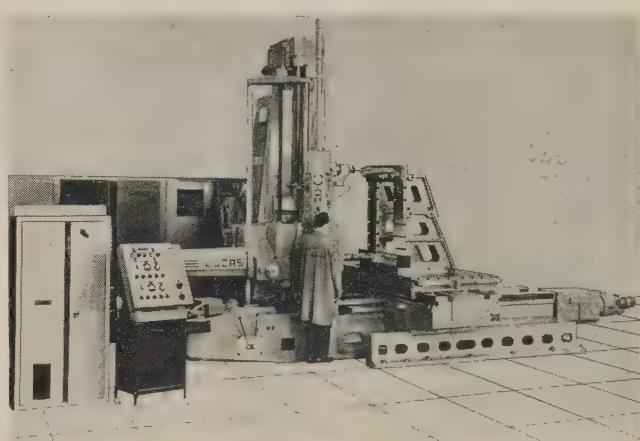
850 HANNA BUILDING  
CLEVELAND 15, OHIO  
An Association of  
Quality Tube Producers

## Numerical or Tracer Controls Operate Large Machine

Table and floor type horizontal boring, drilling, and milling machines, equipped with General Electric program controls, can operate as automatic program controlled machines or as standard units. Changeover from program control to standard can be accomplished quickly.

Machines can be equipped with tracer, numerical positioning, or numerical contouring controls.

Numerical positioning is furnished for six motions. These include head, table, saddle, horizontal or vertical rotary table, and spindle feed. Numerical contouring models provide continuous control while milling complex contoured parts. Write: Lucas Machine Div., New Britain Machine Co., 12302 Kirby Ave., Cleveland 8, Ohio. Phone: Glenville 1-5588



## High Speed Flaw Detector Handles Tubing and Bars



The compact, nondestructive Radac automatic flaw detector uses the electromagnetic method. Speed range is 50 to 500 fpm.

The unit detects surface and subsurface cracks, seams, inclusions, and holes. Adaptable to automatic inspection, it will divert rejects into a separate bin. Functions include checking of diameter, wall thickness and eccentricity, also deviations from standard hardness, from alloy composition, heat treatment, and yield strength.

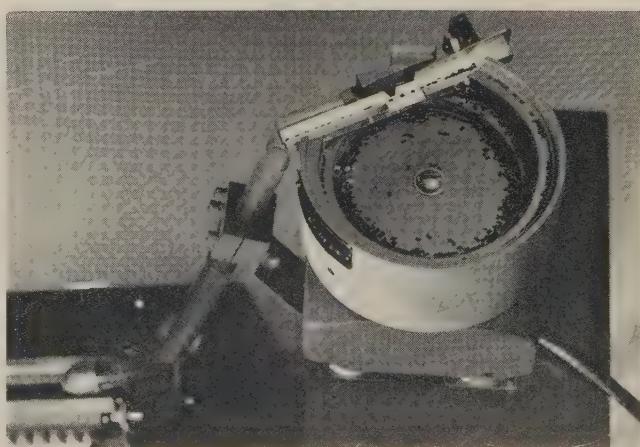
Ferrous and nonferrous tubing, bar stock, and wire in all diameters can be handled. A chart is provided for making adjustments. An unskilled operator can handle it, and the device is completely transistorized. Write: Metrol Inc., 17 E. Holly St., Pasadena, Calif. Phone: Sycamore 3-3085

## Miniature Parts Handled Single File by Feeder

The Micro-Feeder handles 2000 to 30,000 miniature pieces an hour, placing them one at a time into precision sorting and measuring equipment.

The design is based on a standard 5-in. bowl vibratory feeder. A sorting arm places workpieces in single file. They are then moved from a sorting bridge to two gates. The first eliminates piggybacks; the second, doubles. An almost complete automatic classifying operation is possible.

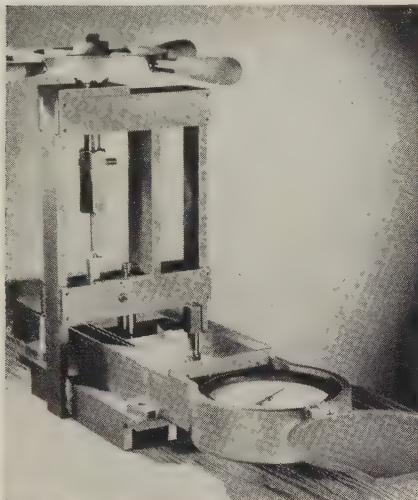
The unit will handle work from 0.001 in. up to 0.250 in. It will feed shapes including rounds, squares, rods, and tubes. Several units can be handled by one man. If noncontamination is a requisite, the device can be placed under a canopy. Write: Affiliated Manufacturers Inc., Lebanon, N. J.



## Testing Unit Portable

The Quick-Test hydraulic instrument was developed for preliminary testing and to relieve power-driven testing machines for work requiring more detailed data.

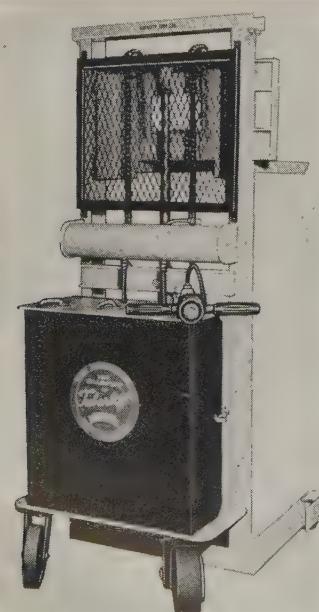
The 47-lb device will test materials for tensile, compression, shear,



and transverse deflection, and will provide up to 160,000 psi using 0.252-in. diameter test samples. Write: Truck Scale & Research Corp., P. O. Box 1047, St. Petersburg, Fla. Phone: 7-8462

## Truck Action Smooth

A fork lift truck, the Tubarlift Champion Stroller, Model 777, has a Hydrowheel fluid drive with



a transmission that eliminates sprockets, chains, and gears. Smooth starts and stops are provided with positive hydraulic braking.

The unit is designed to elevate loads up to 1000 lb at heights up to 60 in., and will operate effectively in 60-in. aisles. Write: Tubar Lift Div., Uhrden Inc., Dennison, Ohio.

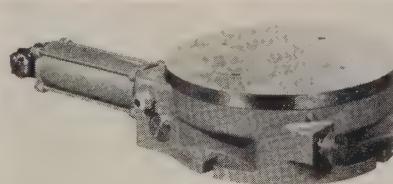
## Paint Brush Galvanizing

A priming coat for steel called Poly-Zinc contains 92 per cent metallic zinc. It prevents rust by cathodic action. It can be brushed or sprayed on a prepared surface. Write: American Cold Galvanizing Co., 31 Hudson St., Cambridge 38, Mass.

## Versatile Table Indexing

The Versi-Table can be set to any index pattern or any number of indexes from four to 24. An adjusting screw at each station will change the locked position from 0 to 15 degrees from its true location.

The table has a skip station arrangement. One, two, three, or five



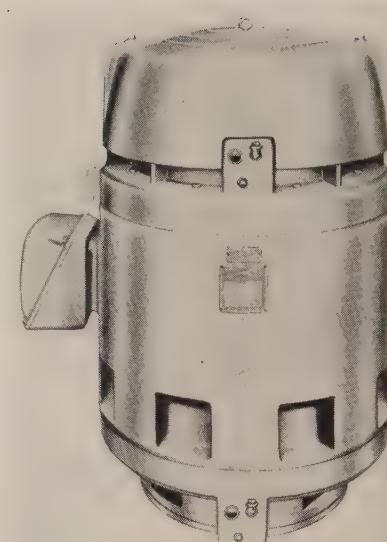
stations can be skipped per index. Air or hydraulic units are available. They are produced in standard 12-in. diameter models. Write: Savage Engineering Div., Lithibar Co., 345 W. 14th St., Holland, Mich. Phone: Export 6-5215

## Vertical Motor Climatized

This vertical hollow shaft motor (available in ratings up to 2000 hp) is designed for indoor and unprotected outdoor service in industrial pumping applications.

Kingsbury-type thrust bearings are utilized in extra-high thrust applications. The design allows bearing inspection of even the largest motor in 5 minutes.

Low cooling air velocity prevents dust and moisture from being drawn into the motor, 90-degree bends in the air flow system keep out snow and rain, and noncorrosive screens



keep out foreign matter and rodents. Write: Dept. P, Louis Allis Co., Milwaukee 1, Wis. Phone: Humboldt 1-6000

## Miller Handles Heavy Cuts

The QM5 vertical Rigidmil for heavy cuts on large workpieces has longitudinal, transverse, and vertical feed. It has a 50-hp vertical head mounted on a fixed column for maximum rigidity.

Vertical, transverse, and longitudinal feed movements, feed rates, and rapid traverse are all controlled from a swinging pendant which is adjustable to any operating position around the machine.

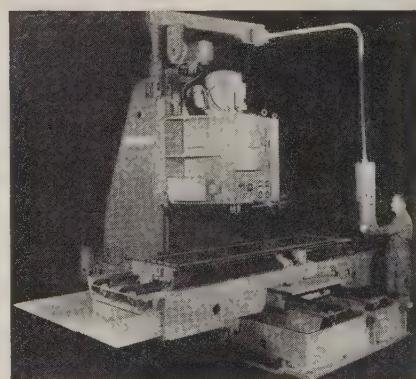
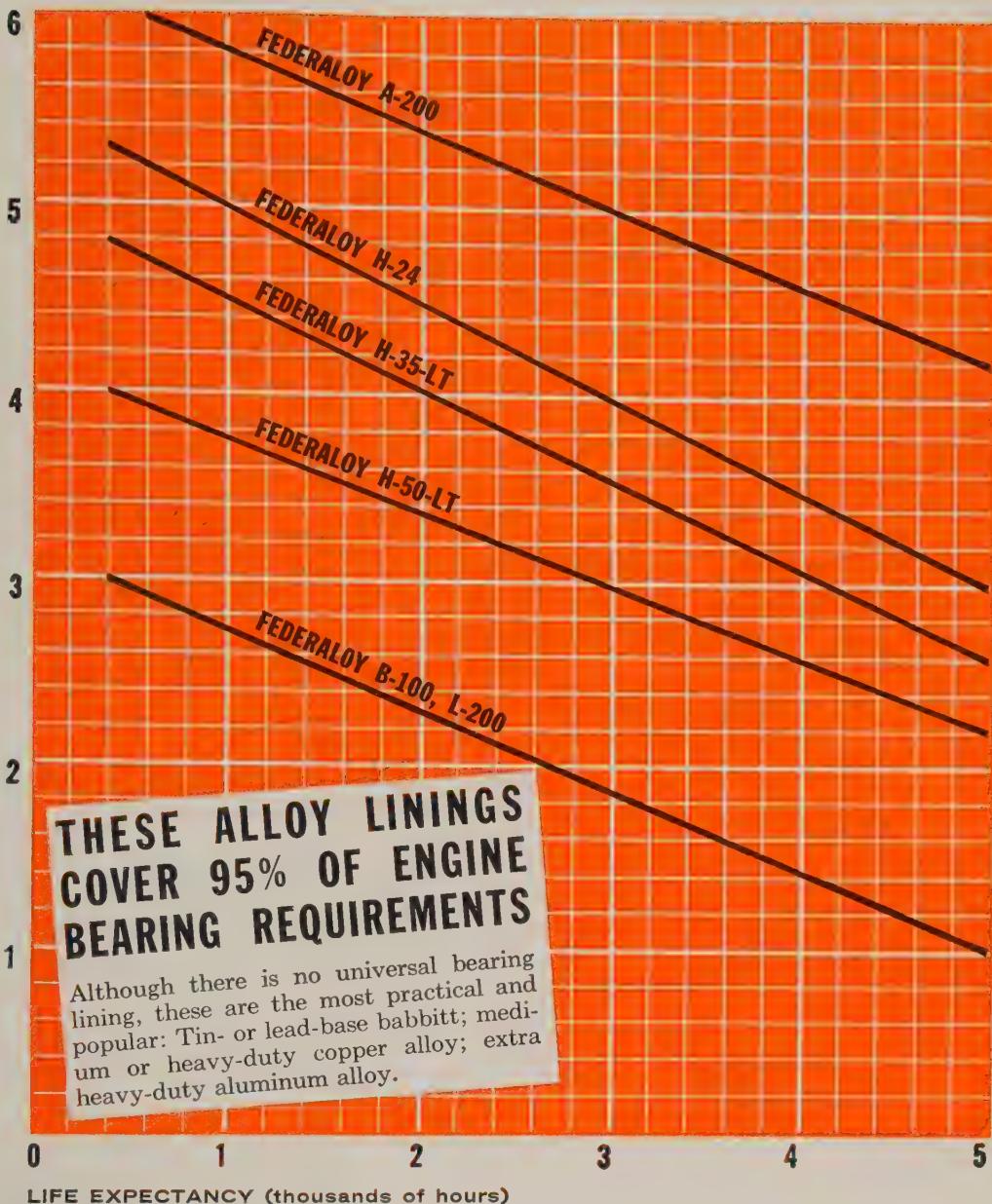


Table movements can be controlled from preset dogs for automatic cycles. Write: Sundstrand Machine Tool Co., Rockford, Ill. Phone: 2-4477

## Boiler Design Advanced

An oil or gas fired, pressurized-furnace steam generator is designed for power, process, or heating loads requiring steam capacities up to 400,000 lb an hour. The design

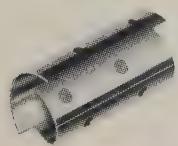
MAX. UNIT BEARING PRESSURE (1000 p.s.i. of projected bearing area)



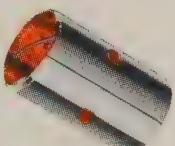
Our specialized, experienced manufacturing facilities will meet your sleeve bearing requirements and *save you money!* Write for free copy of "Sleeve Type Half Bearing" design guide. Address:

## FEDERAL-MOGUL DIVISION

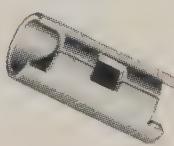
FEDERAL-MOGUL-BOWER BEARINGS, INC., 11051 SHOEMAKER, DETROIT 13, MICHIGAN



Spacer  
Tubes



Bimetal  
Bushings



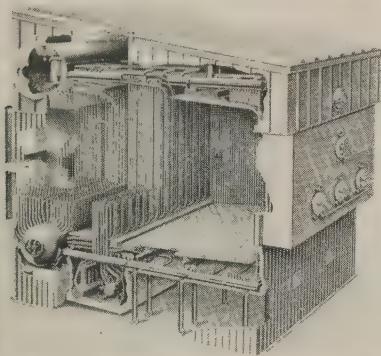
Plain  
Bushings



Bearing-Surfaced  
Thrust Washers



RESEARCH • DESIGN • METALLURGY • PRECISION MANUFACTURING



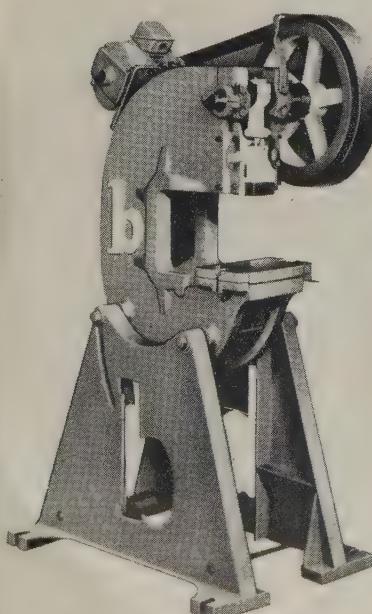
eliminates need for an induced draft fan with subsequent savings in fuel, fan, and power costs.

This Power for Industry boiler is available for steam pressures up to 1150 psi, and for superheated steam temperatures up to 900° F. Write: Babcock & Wilcox, 161 E. 42nd St., New York, N. Y. Phone: Mulberry 7-6700

### Press Has Deep Throat

The 90 Series plain OBI Benchmaster has a standard shut height of 9 in. exclusive of bolster plate. It is available in 12 and 15 in. shut heights. All models have throat depth punching to the center of circles up to 24 in. in diameter.

Plain types deliver approximately 210 strokes a minute. The 8-ton presses are available in back geared models with speeds of about 100 strokes a minute. Bed area measures



8 x 11 in. Write: Benchmaster Mfg. Co., 1835 W. Rosecrans Ave., Gardena, Calif. Phone: Faculty 1-0411

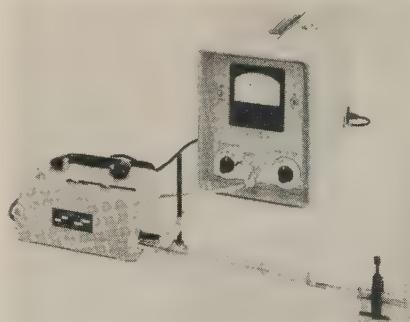
### Racking Made Easy

An automatic turnaround mechanism makes it easy to place parts on racks on their way to an anodizing machine. Swivel devices turn racks one side out and then the other as they move along a monorail.

The mechanism saves labor and time, and provides an efficient adjunct to automated systems. Where stripping of racks is not required, load and unload monorails may be continuous. Write: Hanson-Van Winkle - Munning Co., Matawan, N. J. Phone: Matawan 1-1000

### Measuring Roughness

The Profilometer Group III for measuring surface roughness has a roughness width cutoff selection of 0.010, 0.030, and 0.100 in. Surface



measurements can be made on  $\frac{1}{8}$ -in. inside diameters to flats and on  $\frac{1}{8}$ -in. outside diameters to flats.

The Type QC amplitimeter shows arithmetical or rms average roughness height, as selected by a panel switch. It has six ranges—0 to 3, 10, 30, 100, 300, and 1000 micro-inches. Write: Micrometrical Mfg. Co., Ann Arbor, Mich. Phone: Normandy 2-5626

### Controlled from Platform

Operators of rider-type, high lift, JackStaker material handling trucks drive while standing.

Controls for steering, lifting and lowering, and driving in forward or reverse are on the truck platform.

Trucks (with forks or platforms) are available in capacities from 1500

*Let me\* show you*



\*Bob Marr,  
*P&J Representative*  
*Houston, Texas*  
*Telephone: MOhawk 7-3964*

*how two P&J  
Automatics  
helped Rockwell  
Manufacturing Co.*

#### JOB FACTS:

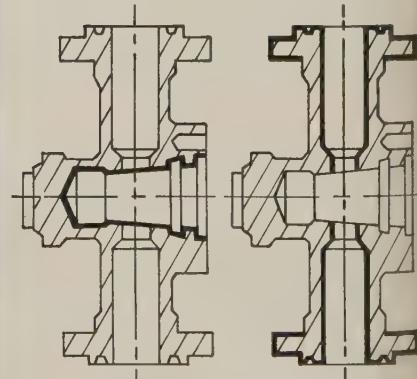
**PART:** Valve Body

**MATERIAL:** Steel Forging

**REQUIRED:** A series of 22 roughing and finishing cuts involving very heavy metal removal

**THE MACHINES:** 2 P&J 4-U Automatic Turret Lathes

**THE RESULTS:** A part completed in only 3 fully automatic cycles... with machining time reduced 71%.



FIRST  
OPERATION

SECOND  
OPERATION

BLACK AREAS INDICATE METAL REMOVED

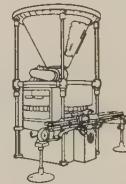
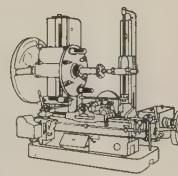
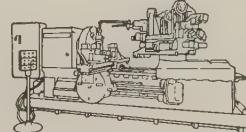
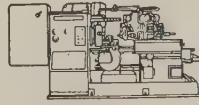
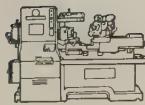


## • REDUCE MACHINE-HOURS 71%!

The Rockwell Manufacturing Company of Sulphur Springs, Texas, a leading producer of valves for petroleum and other industries, was using hand-type turret lathes to produce finished valve bodies from rough steel forgings. Looking for a way to reduce costs on this operation, Rockwell purchased two Potter & Johnston 4-U Automatic Turret Lathes. Machine-hours for this operation have been reduced 71% and man-hours have been reduced 86%. In addition, the hand machines and their operators have been released for other work they can handle more profitably, and overall plant production has been increased.

If the parts you manufacture require a series of complex cuts, a P&J Automatic can bring you important savings in time and money by producing these parts in a high-speed, fully automatic cycle. And you'll find that P&J Machines are recognized for their ability to take continuous heavy-duty operation in stride.

Act now. Ask the P&J Representative in your area to recommend a production plan for your specific needs. Or, if you prefer, write direct to Potter & Johnston Company, Pawtucket, Rhode Island.



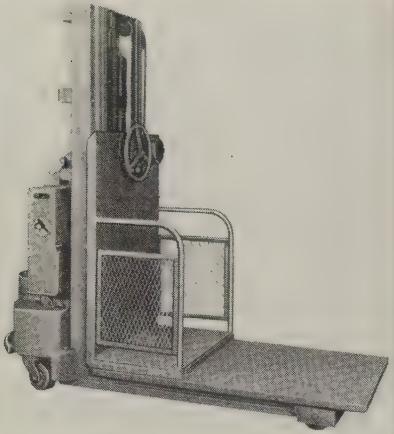
AUTOMATIC TURRET LATHEES... GEAR CUTTERS... PACKAGING MACHINES



# POTTER & JOHNSTON

SUBSIDIARY OF PRATT & WHITNEY COMPANY, INC.

PRECISION PRODUCTION TOOLING SINCE 1898

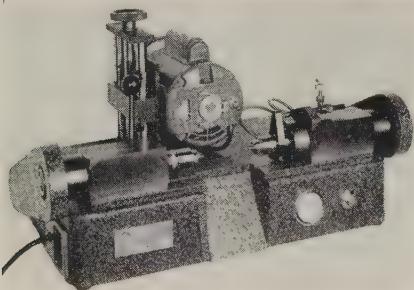


The product is neutral and will not attack such reactive metals as aluminum, zinc, brass, or magnesium, and it does not contaminate alkali electrocleaners that may be used following precleaning. Write: Enthone Inc., 442 Elm St., New Haven, Conn. Phone: Spruce 7-5581

to 3000 lb. Each unit has a 3½ ft high screen guard on either side of the operating position. They are offered in fork or platform models, and standard over-all lengths of 81, 87, 93, 99, or 105 in. Write: Dept. R8-11, Lewis-Shepard Products Inc., 125 Walnut St., Watertown 72, Mass. Phone: Watertown 4-5400

### Deburrers without Torque

Deburring both sides of holes from 1/32 to ½ in. diameter can be done economically on this opposed spindle machine.



Spindles rotate in opposite directions, eliminating cutter torque. Spindles are air operated. Write: Model Machine Co. Inc., 4729 Hawthorne St., Philadelphia 24, Pa. Phone: Cumberland 8-4565

### Solvent Cleans Cold

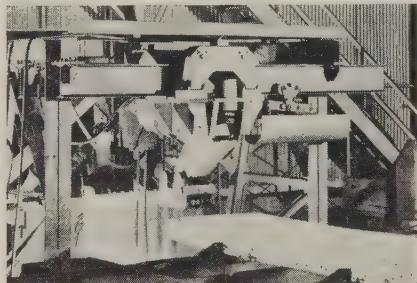
Emulsion Cleaner 62 provides rapid, cold cleaning of all metals to remove heavy oil films and solid dirt. It can be obtained ready for use or as a concentrate.

Simple immersion in the cleaner at room temperature for 5 to 60 seconds followed by a cold water rinsing is sufficient to preclean metals preparatory to plating, phosphating, or blackening. It will absorb high concentrations of oil and grease before becoming inoperative.

### Mill Products Marked

Slabs and blooms are stamped by this remotely controlled Mecco marker.

The unit has a pneumatically powered stamping head (it can take up to nine marking wheels), a trolley mounted mechanism for horizontal positioning, and a console for actuating the stamping



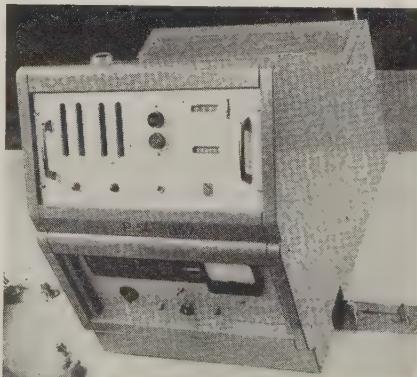
cycle and changing characters in the marking head.

Clear cut impressions are obtainable when scale is present. Write: M. E. Cunningham Co., 1038 Chateau St., Pittsburgh 33, Pa. Phone: Allegheny 1-3280

### Small Parts Inspected

The Atomonitor employs radioactivity to inspect production line assemblies for the presence of hidden vital parts at rates up to 3000 an hour.

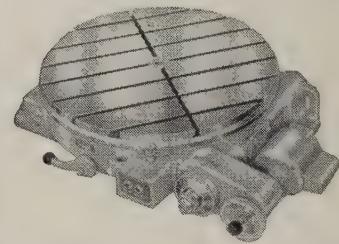
Applications include the inspection of artillery-shell fuse heads, instruments, electrical and electronic apparatus, motor components, or almost any small device in which



*Check this  
Complete  
Line of*

**PRATT & WHITNEY**

## Precision ROTARY TABLES



### HORIZONTAL ROTARY TABLES

- 12-Inch Hand Operated
- 20-Inch Hand Operated
- 24-Inch Motor-Driven
- 30-Inch Motor-Driven
- 42-Inch Motor-Driven
- 50-Inch Motor-Driven

### OPTICAL ROTARY TABLE

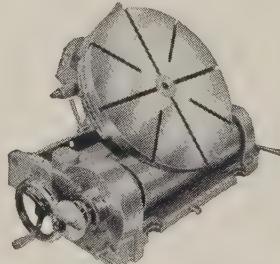
- 24-Inch Horizontal

### AUTOMATIC INDEXING

- 42-Inch Horizontal

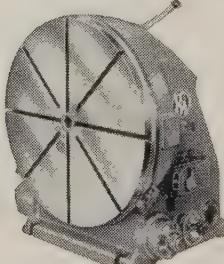
### NUMERICALLY CONTROLLED

- 42-Inch Horizontal



### TILTING ROTARY TABLES

- 10-Inch Hand Operated
- 16-Inch Hand Operated
- 24-Inch Power Rotated
- 36-Inch Power Rotated



### VERTICAL ROTARY TABLES

- 30-Inch Motor-Driven
- 48-Inch Motor-Driven

### NUMERICALLY CONTROLLED

- 30-Inch Vertical



**PRATT & WHITNEY**

Equipped with  
numerical control, this  
Pratt & Whitney 42"  
Rotary Table is bringing  
new standards of  
speed and efficiency to  
high-precision work  
involving circular spacing  
and angular positioning.

Send for  
**FREE**  
Circular

## 16\* PRECISION ROTARY TABLES To Choose From!

Whatever your requirements on jobs involving accurate circular spacing or angular positioning, you'll find the right rotary table in our complete line. All of the 16 available sizes and models are accurate to a few seconds of arc . . . and if you require the ultimate in precision, the P&W Optical Rotary Table has a guaranteed overall accuracy of 3 seconds of arc. This is real accuracy when you realize there are 1,296,000 seconds in a complete circle!

P&W Rotary Tables are built for ruggedness and stamina as well as precision. Whether you use them in conjunction with jig borers and other tools to save time and set-up in machining

**PRATT & WHITNEY COMPANY, INC.**  
Charter Oak Blvd., West Hartford, Conn.

Please send my free copy of your Circular No. 619, describing all 16 sizes and models in the Pratt & Whitney line of Precision Rotary Tables.

NAME \_\_\_\_\_

POSITION \_\_\_\_\_

COMPANY \_\_\_\_\_

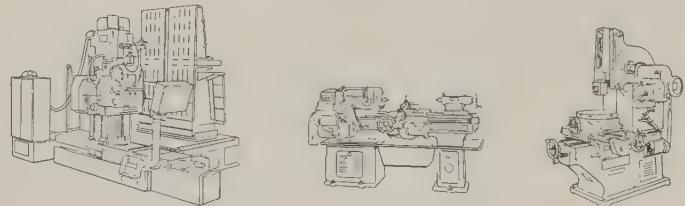
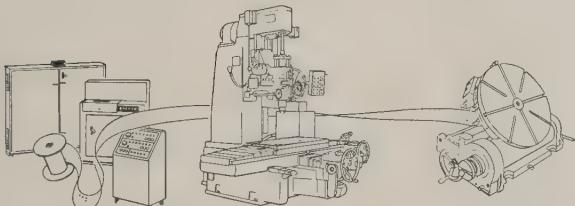
CO. ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

operations . . . or by themselves for faster, more accurate inspection, circular graduating or layout . . . P&W Rotary Tables will take continuous, heavy-duty work in stride.

Get all the facts on the 16 sizes and models of Pratt & Whitney *Precision* Rotary Tables now. See how one of these tables can bring new speed, accuracy and economy to your operations. Use the coupon above to send for your copy of our new circular, which tells you all about these precision rotary tables.

Pratt & Whitney Company, Inc.,  
13 Charter Oak Blvd., West Hartford, Conn.



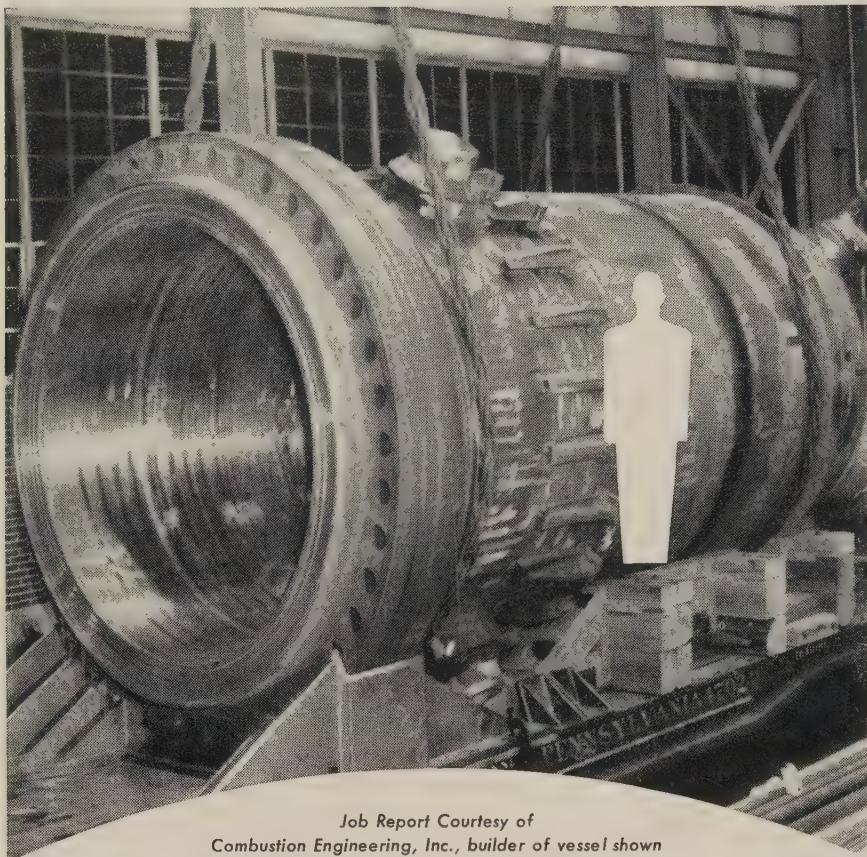
NUMERICAL CONTROL . . . JIG BORERS . . . ROTARY TABLES . . . KELLER MACHINES . . . LATHES . . . VERTICAL SHAPERS



# PRATT & WHITNEY

FIRST CHOICE FOR ACCURACY  
MACHINE TOOLS • GAGES • CUTTING TOOLS

# This WELDED nuclear pressure vessel holds a practical idea for you



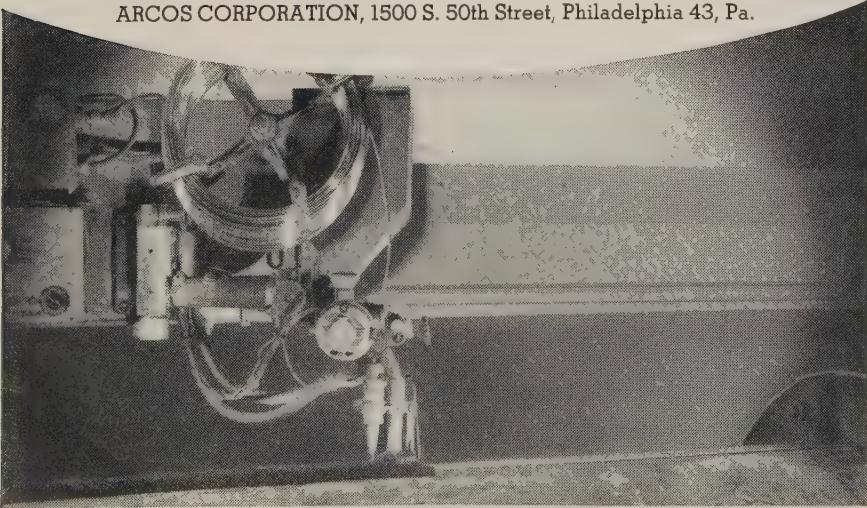
Job Report Courtesy of  
Combustion Engineering, Inc., builder of vessel shown

## USE ARCOSITE FLUX

### for submerged arc welding

In nuclear installations where radio activity makes weld failure dangerous to personnel and can cause indefinite shutdown, sound corrosion resistant welds are of utmost importance. To inhibit corrosion, portions of the 9 ft. dia. interior of this 33 ft. reactor were overlaid with  $\frac{1}{4}$  in. of 308L weld metal. Submerged arc welding with ARCOSITE S4 flux was used for the job. The girth and longitudinal joints of the low alloy steel plates were also submerged arc welded using ARCOSITE B5 flux. Cost-wise, no other conventional method of cladding was practical. Arcos weld metal quality guarantees corrosion resistance . . . freedom from maintenance.

ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.



## NEW PRODUCTS

and equipment

the vital part cannot be seen or felt after assembly. Write: NRD Instrument Div., Nuclear Corp. of America, 400 Park Ave., New York 17, N. Y. Phone: Plaza 8-0700

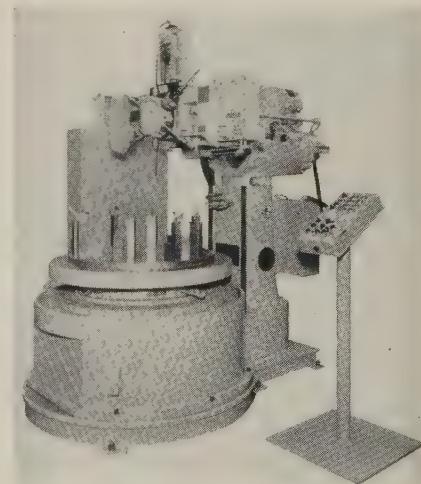
### Freezer Cools Rapidly

A 180-cu ft industrial freezer will cool 500 lb of AM-350 stainless steel from ambient temperature to  $-125^{\circ}\text{ F}$  in 60 minutes.

Austenitic stainless steel and tools are stabilized quickly and safely. Complete transformation of austenite to martensite is accomplished without warpage, excessive scaling, or distortion. Write: Dept. PW-297, Webber Engineering Corp., P. O. Box 217, Indianapolis 6, Ind. Phone: Melrose 4-5855

### Special Changed Readily

This special Burgmaster radial turret drill is built up from standard components and a standard autoindexing circular table. The machine is supplied as a complete, automatic unit ready for production—including tools, fixtures, machine, and hydraulic power.



The unit is arranged for center drilling, drilling, and tapping bolt circles having 8, 13, and 16 hole patterns.

Although made to handle a certain workpiece, the machine can be readily changed over to another piece of radically different design. Write: Burg Tool & Mfg. Co., 15001 S. Figueroa St., Gardena, Calif. Phone: Davis 9-4158

# NEW Literature

Write directly to the company for a copy

## Roller Conveyors

This booklet describes three lines of stock roller conveyors. One has a turn-over feature for setting rollers high or low. Another is being produced in aluminum and lightweight steel. The third has a multiple punched frame for greater variation in roll spacing and length. Logan Co., 200 Cabel St., Louisville 6, Ky.

## Swaging Machines

A brochure describes electrohydraulic, die closing, rotary swaging machines. They are designed to make reductions in diameter on rods, heavy tubes, or other parts which cannot be reduced by standard rotary swagers. Swaging Machine Div., Torrington Co., Torrington, Conn.

## Bandsaws

A catalog contains information on saws, stock stands, and accessories. Johnson Mfg. Corp., Crystal Street, Albion, Mich.

## Vertical Motors

Brochure MM161 describes vertical hollow shaft motors for turbine pumps: 1 to 700 hp weather protected, and 1 to 500 hp totally enclosed and explosion proof models. Electric Motor Div., A. O. Smith Corp., Tipp City, Ohio.

## Lift Truck Attachments

A catalog of mechanical and hydraulic lift truck attachments illustrates 26 ways for owners to get more use from their trucks. Little Giant Products Inc., 1570 N.E. Adams St., Peoria 3, Ill.

## Electric Plants

A brochure describes electric generating plants for standby or constant use. Sets range from small, air-cooled units to large, diesel portables ranging up to 300 kw. Jetapower Div., Jeta Metal Fabricators Inc., 957 Saw Mill River Rd., Yonkers 2, N. Y.

## Handling Equipment

Catalog No. 90 describes a variety of corrugated steel boxes, skids, and pallets for unit load handling. Union Metal Mfg. Co., Canton 5, Ohio.



## NEW BOOKS

*Brass and Bronze Foundry Practice*, Harry M. St. John, Penton Publishing Co., 1213 W. Third St., Cleveland 13, Ohio. 244 pages, \$8.00

This volume brings together the facts and theories of brass and bronze foundry practice. It covers alloys, technical and operating procedures, quality control, testing, brass foundry economics, cost control, casting design, patternmaking, foundry layout, and salvage of waste materials. A complete index extends the reference capacity of the work, and 85 illustrations clarify subject matter.

## When corrosion is a threat to the life of Stainless Welds

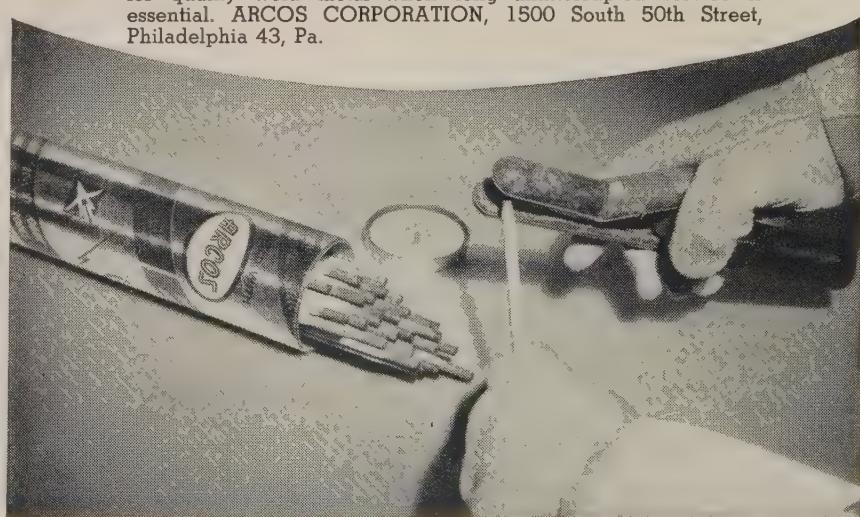


Job report courtesy of  
Superior Welding Co., Decatur, Ill.

**WELD WITH  ARCOS**

## STAINLESS ELECTRODES

This is a nitric acid absorption column for the chemical industry. The shell and flanges of solid 304 ELC stainless were welded with Arcos CHROMEND 19-9 Cb Electrodes to resist chemical attack at 150 p.s.i.g. and 300°F. Arcos CHROMEND K-LC Electrodes were used for welding the bubble caps and coil clips. Together, these two Arcos Electrodes proved the point: there's no substitute for quality weld metal when long uninterrupted service is essential. ARCos CORPORATION, 1500 South 50th Street, Philadelphia 43, Pa.



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- Hot Rolled Pickled Sheets
- Cold Rolled Steel in Coil (*full hard only*)
- Cold Rolled Sheets
- Alloy Sheets and Plates
- Plates ( $\frac{3}{16}$ " and lighter)
- Electrical Sheets
- Electric Weld Line Pipe

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EXPEDITE YOUR RUSH ORDERS WITH . . .



July 21, 1958

# Market Outlook

## Automakers Wield Big Stick

ALTHOUGH THEY'RE less vocal in their opposition to higher steel prices than Sen. Estes Kefauver (D., Tenn.), automakers are not secretive about their stand. They're dead set against any increase.

Chevrolet made that clear when it told bar suppliers outside the Detroit area to "get competitive" with prices being quoted by Great Lakes Steel Corp. Although they felt the volume of business wouldn't justify absorbing an additional \$2 a ton in freight, distant producers went along with the ultimatum. They weren't about to risk alienating a potentially big customer.

Automotive buying of finished steel is down markedly this year (3.3 million tons, vs. 6.1 million in the like period of 1957), but there has been no lessening of the carbuilders' influence on prices. They still represent 15 per cent of the market. With their concentrated buying power, they can resist increases much more effectively than steel service centers (warehouses) or construction industries.

**HIGHER PRICES IN AUGUST?**—Although second quarter earnings of most steel companies will probably surpass those of the first three months, some producers will only reduce their losses. They regard higher prices as a matter of the greatest urgency and wish U. S. Steel Corp. would take the lead. Whatever its reasons for waiting, Big Steel is being credited with good strategy. Says a union source: "By postponing a price hike until August or September, they'll be able to say that they tried their best to live with higher labor costs, but just couldn't do it. They'll assemble some figures during this period of 'clarification' to substantiate their claim."

**DISTRIBUTOR SALES IMPROVE**—Better demand for steel from the construction industry and from manufacturers whose inventories had reached the danger point boosted warehouse sales during May and June. Chicago and other regions heavily dependent on agriculture showed substantial increases in shipments. Areas tied to the automotive and capital goods industries reported only modest gains. Warehouse operators forecast gradual improvement during the fall but won't increase their inventories (3.7 million tons).

**JULY LOOKS BETTER**—Order books aren't filling up as fast as they did in June, but it's clear that July's entries will be considerably better than

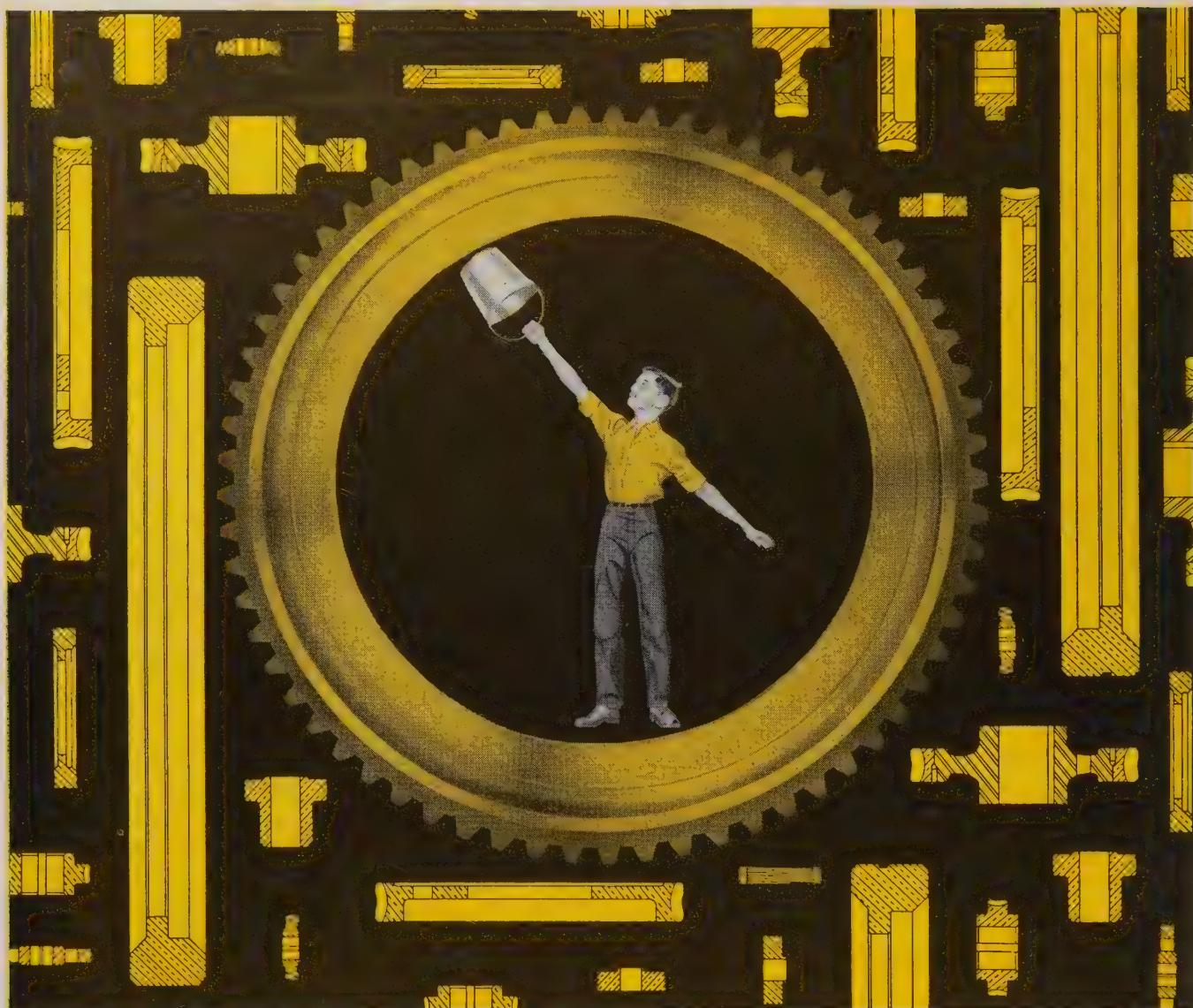
steelmakers expected. Demand continues strong for construction products, galvanized sheets, and tin plate. Agricultural implement manufacturers are buying steadily; miscellaneous users are replacing depleted inventories.

**INGOT RATE CLIMBS**—Responding to improved sales prospects, steelmakers boosted their operating rate 2 points last week to 55.5 per cent of capacity. Production was about 1.5 million net tons of steel for ingots and castings. The biggest gain was scored at Cleveland where Jones & Laughlin Steel Corp. resumed open hearth operations after a four-month shutdown. STEEL's composite scrap price rose 84 cents last week to \$36.67 per ton.

**APPLIANCE OUTLOOK**—"Household appliance manufacturers will be ordering better tonnages by August or September," a sales manager predicts. "For the last three months their steel inventories have been at rock bottom, but they've had big stocks of finished goods on hand. Now there seems to be an upswing in retail sales which is cutting into the stocks. Before long, appliance makers will be buying as much steel as they're using."

### WHERE TO FIND MARKETS & PRICES

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Haynes Stellite Co., a division of Union Carbide Corp.

## Investment Casting Sales Slip

Millions

1958 . . . . .	\$ 85
1957 . . . . .	104
1956 . . . . .	115
1955 . . . . .	102
1954 . . . . .	86
1953 . . . . .	80

Estimated by Investment Casting Institute.

# Investment Castings Down

**Sharp defense cutbacks trigger slump, forcing the industry to seek new commercial applications and push technological developments. Brighter future expected**

INVESTMENT CASTING sales through May were 29 per cent off last year's pace. The industry expects late 1958 business to partially make up the loss. Sales are expected to wind up 18 per cent under 1957's.

Backlogs in May were 37 per cent below those in the same month last year.

**U. S. Buys Less**—Sharp cutbacks in defense buying since 1957 are blamed for the slump. Aircraft and missilework, which accounted for 70 to 80 per cent of 1957's business, are down to 50-60 per cent.

Some plants have curtailed operations; others have sold out. (The industry now has about 95 firms.) But several companies specializing in commercial work are doing fairly well.

Excess capacity has caused price

cutting, but some people believe it amounts to only 10 to 15 per cent.

**Recouping** — Two things are being done to replace defense business:

1. Commercial contracts for intricate, close tolerance parts are being sought, particularly in electronics and appliances.

2. Technical developments are being pushed to broaden applications.

**Bigger Castings Needed**—John K. Dietz, a Chance Vought metallurgical engineer, said at an Investment Casting Institute meeting: At the present rate of aircraft and missile production, castings 36 to 48 in., with 0.1 in. minimum section, a 260,000-psi tensile strength, 210,000-psi yield strength, and a minimum of 4 per cent elongation would have a \$125-million sales potential.

Present limits are 15 in., with a minimum section of 0.2 in., and a tensile strength of 150,000 psi.

"The sales potential would be even bigger," Mr. Dietz said, "if some of the larger fittings produced from forgings or heavy machinings could be cast."

Ceramic type molds are the most important new development. Their promise: Lower cost and larger, more intricate, higher quality castings.

Some parts, having extreme physical properties, are being made for aircraft and missiles by vacuum melting and vacuum casting.

New alloys, with superior physical properties, are also broadening markets.

## Pig Iron . . .

**Pig Iron Prices, Page 162**

With many ferrous foundries closed for vacations, shipments of pig iron and coke are down substantially this month. Operations at those shops which are open are spotty because of low order backlog which average only three or four days. Merchant pig iron sellers anticipate no marked improvement until after Labor Day.

Because of slack business in the automotive industry, National Mal-

leable & Steel Castings Co. has closed its Indianapolis plant for the first time since it opened in 1881. The management predicts the shutdown will last at least one year. Work usually done at that plant will be shifted to the firm's plants at Chicago and Cleveland.

Wisconsin Steel Div., International Harvester Co., blew out its No. 1 furnace at South Chicago, Ill., June 28, leaving only one of three active. In the Chicago district, only 22 of 43 blast furnaces are operating.

Freight rates have been reduced

from Boston (Everett, Mass.) to several consuming points: Springfield, Holyoke, and Greenfield, Mass., to \$4.79 per gross ton from \$5.77; Amesbury, Mass., to \$3.80 from \$4.57; and Winchendon, Mass., to \$4.30 from \$5.17.

## Iron Ore . . .

Iron Ore Prices, Page 163

The Chesapeake & Ohio Railway's ore handling facilities at Newport News, Va., recently set a one-day unloading record of 42,624

net tons from two ships.

The Liberian bulk carrier, *Rio Macareo*, discharged 38,325 net tons of Labrador ore destined for the Armco plant at Ashland, Ky. It was the largest single consignment ever received at the port. On the same day, the Japanese carrier, *Akikawa Maru*, delivered 4229 tons of manganese ore from Ghana, West Africa.

## Wire . . .

Wire Prices, Pages 159 & 160

Most wire mills are resuming production this week following the early July suspension for mass vacations. July shipments will be light, for some mills probably the smallest monthly tonnage for the year.

August volume will be heavier. Orders for shipment that month are being booked. Merchant products, available from stock, are being shipped this month. A slight improvement in demand for nails is noted.

## Sheets, Strip . . .

Sheet & Strip Prices, Pages 158 & 159

Sheet steel business is a shade better than had been expected. Except for automotive requirements, most consuming lines are buying a little, and delivery promises are slightly more extended than they were. Tonnage is readily available in most sheet categories.

Hot-rolled carbon shipments range two to three weeks, and cold-rolled carbon around four weeks. At least one large producer of galvanized sheets has nothing to offer before the last week of August. Deliveries on silicon sheets, stainless, and other specialties are steady.

Bookings, generally, are down from June's. In large measure, the situation is attributable to price hedging last month. Although prices haven't changed, there is little additional hedging. Consumers are not anxious to build stocks, though inventories are seriously depleted in some instances.

One feature of demand is that deliveries are specified for longer periods. For example, Granite City Steel Co.'s July order book is expected to equal June's, but deliveries are being spread out through July, August, and September.

**SRH** . . . the same revolutionary improvements that set the Gold Star SR above and beyond the performance standards ever before achieved by a dc rectifier type welder. Designed primarily for compactness, the SRH is only 30 $\frac{1}{4}$ " high — is ideally suited for stacking or paralleling in minimum space. Three models, 200 to 400 amps.

**GOLD STAR ALL STAR LINE**

**300-M** . . . an ac welder for inert gas and metallic arc processes. Combines unequalled welding characteristics with Miller's unique electric control circuit which permits precise slow or fast start. Features: built-in high frequency, primary contactor and  $\frac{1}{2}$  KVA control transformer. Offered in three basic models of from 200 to 400 amperes with optional water and gas controls available.

Complete particulars on any of the above welders will be sent promptly.

**miller**

ELECTRIC MANUFACTURING COMPANY, INC. Appleton, Wisconsin

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal, P.Q.

## Plates . . .

Plate Prices, Page 157

Although sheared plate bookings appear more numerous than they were a month ago, platemakers say tonnage is not as heavy, and deliveries are easier. Carbon plates are available within two weeks; silicon plates, three to four weeks; and alloy plates, four weeks.

Bookings over the remainder of the summer should be heavier as plate fabricators' operations become less adversely affected by vacation suspensions. Also, building and pipe requirements are expected to rise, and shipwork appears a little more promising. Heavy industrial equipment and railroad needs, though, show no signs of gaining.

Plate mill capacity of U. S. Steel's Tennessee Coal & Iron Div. at the Fairfield Works, Birmingham, will be increased 20 per cent by late 1959.

## Reinforcing Bars . . .

Reinforcing Bar Prices Page 157

Welded highway mesh tonnage being estimated in eastern markets is the heaviest so far this year. Also, concrete reinforcing bar contracts are up in New England, with bridge and school tonnages leading demand. One Boston office building is taking close to 1000 tons of bars.

Orders are more widely spread among distributors and fabricators than they were. More sellers are competitive, and there is some price shading.

## Steel Bars . . .

Bar Prices, Page 157

Some spotty improvement in steel bar demand is reported, notably in the Midwest, but, over-all, a sluggish market situation continues.

Indications are there won't be much change until September, barring unexpected developments in industry stemming from military intervention in the Middle East.

Buying is said to be at the slowest pace of the year. Vacation suspensions are reflected to some extent, but price-hedge buying in June also is a factor. There is little hedge buying currently, consumers, for the most part, covering only

immediate needs with prompt mill shipments available.

Barmakers anticipate better demand will begin developing next month, especially if automotive requirements turn sharply upward.

Great Lakes Steel Corp. plans to put its 15-in. mill into production next month if it can get enough business to support operations. Meanwhile, other producers reaching into the Detroit automotive market from outside are absorbing \$2 a ton more freight to remain competitive with Great Lakes Steel's 10-in. bar prices.

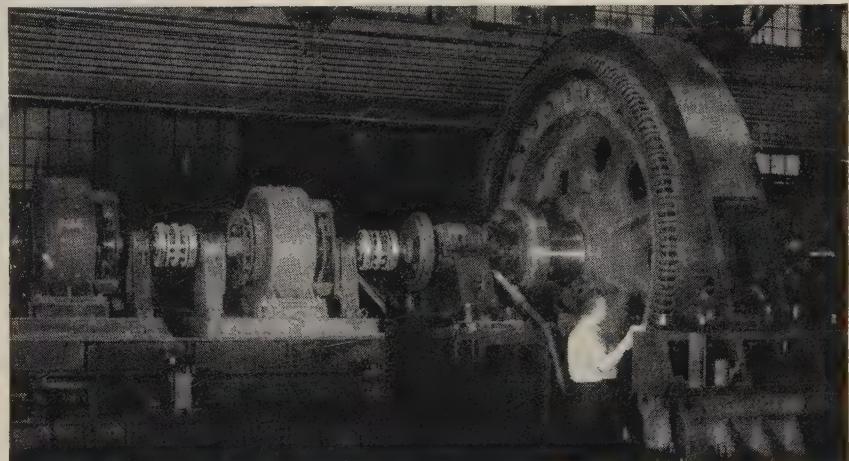
## Tubular Goods . . .

Tubular Goods Prices, Page 161

Indications are July tubular goods volume will be off from that reported in June. Bookings last month, to some extent, were due to hedging against an anticipated price increase that didn't come July 1.

Building and other construction work is providing a fairly strong demand for standard pipe, but makers of oil country goods and line pipe are entertaining little new volume. Large diameter pipe volume, though, has picked up.

**Protect Your Machinery with**  
**THOMAS** ALL METAL **FLEXIBLE COUPLINGS**



**NO LUBRICATION**      **NO MAINTENANCE**      **NO WEARING PARTS**

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running. They will protect your equipment and extend the life of your machines. Properly installed and operated within rated conditions, Thomas Flexible Couplings should last a lifetime.

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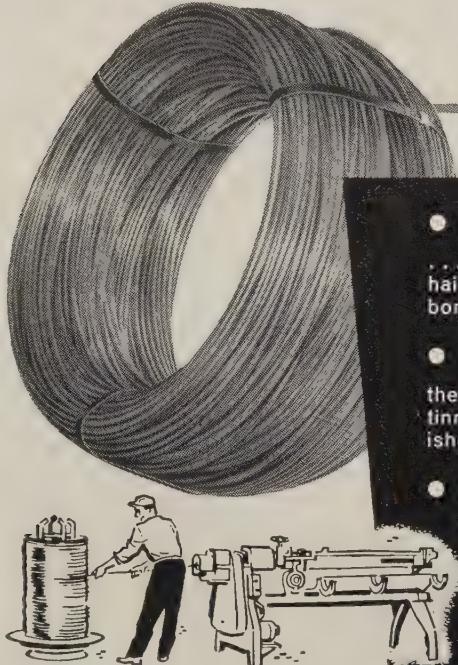
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**THOMAS FLEXIBLE COUPLING COMPANY**  
WARREN, PENNSYLVANIA, U.S.A.



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HALF CENTURY  
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- **Sizes up to 9/16"...**  
... down to almost the size of a human hair, in low carbon and medium low carbon steels.
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the right wire for the job—coppered, tinned, bright, galvanized and other finishes to fit your production needs.
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Continental Wire is available in almost any temper and analysis in low and medium low carbon steels for your particular forming jobs.
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**ECONO-COIL**—Reduces scrap loss up to 90 percent. Saves material handling time. The Econo-Coil gives you continuous length wire coils of 2000# to 3000# catchweight, in sizes from 12 gage through 1/2" diameter. Shipped on returnable Econo-Coil reels.

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**SPECIAL SHAPES**—D-shaped, V-shaped, oval, half-oval, half-round, square, rectangular, triangular, key-stone-shaped and others. Saves fabricating and machining costs.

Chances are you have a problem right now that we can help you solve—with Wire. Call us.



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PRODUCERS OF Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.

El Paso Natural Gas Co. plans a gas pipeline from the Aneth field area of Utah, Colorado, New Mexico, and Arizona. It will cost \$26 millions, and include 13-miles of 20-in. line, 62 miles of 16-in. line, and 102 miles of various dimensions.

## Tin Plate . . .

Tin Plate Prices, Page 159

May shipments of metal cans totaled 364,608 tons, vs. 319,748 in April and 399,323 in May last year, reports the Census Bureau. The total for the first five months of this year was 1,665,710 tons, vs. 1,756,430 shipped in the like period last year.

## Ferroalloys . . .

Ferroalloy Prices, Page 164

A ferromanganese-silicon alloy has been introduced by Electro Metallurgical Co., a division of Union Carbide Corp., New York. It is used as a slag reducing agent and a source of low-carbon manganese.

Many melters are using it for slag reduction in place of ferrochrome-silicon, particularly in the production of 200-series stainless steel. Substantial cost savings are claimed in meeting high-manganese specifications.

The price of \$110 per gross ton, Mt. Pleasant and Siglo, Tenn., on ferrophosphorus, appearing on Page 172 of the July 14 issue was in error. The correct price is \$120 per gross ton, carload, bulk, f.o.b. sellers' works, Mt. Pleasant and Siglo, Tenn. Also, the unitage for each per cent phosphorus, above or below the base, is \$5, not \$4.

## Fasteners . . .

Bolt, Nut, Rivet Prices, Page 160

Competition for going business is keen in the industrial fastener market, but order volume appears to be slightly better, and makers are expecting a steady pickup in buying the rest of the year. Automotive inquiry is beginning to come in but not much business is expected on auto account until September.

While published discounts are unchanged, there has been considerable price cutting in this market recently. In highly competitive situations, some sellers have departed

from the published discounts, quoting net prices per 100 pieces on case quantities, 30 case quantities, 20,000-lb and 40,000-lb lots.

Producers claim they should advance prices to offset higher wage costs, but no formal price action is anticipated until the situation with respect to steel prices is clarified.

## Service Centers Busier

A slight, steady increase in May and June shipments is reported by the nation's steel service centers. But surveys by the American Steel Warehouse Association indicate the situation varies by geographic region.

June reports show that Chicago and other areas heavily dependent on agriculture reported substantial increases in steel shipments. Areas tied to automotive and capital goods have had only modest gains. Plant shutdowns for vacations will exert a depressing influence during July and August.

Areas reporting improved shipments in June included: Chicago, the Twin Cities, Nebraska, Iowa, Kansas, Missouri, Oklahoma, and Texas. The South also reported improvement during the month, but reports from the West Coast indicate local factors are holding back a stepup in business.

Robert G. Welch, executive vice president of the association, said three factors influencing better volume in May and June were: Construction activity, government contracts, and low inventories of manufacturers. He said demand for structurals, stainless, and many types of flat-rolled products has picked up.

Stocks of industrial steel products held by the steel service centers total an estimated 3,700,000 net tons. Not much change is anticipated over coming months.

Industry leaders say steel service center sales started to decline in the spring of 1957, but the contraction has been uneven, having much greater impact in the Great Lakes and Atlantic Seaboard regions than in the South and West.

## Distributors . . .

Prices, Page 162

Activity at steel service centers is expected to hit the low point of the year this month. Distributors expect an upturn next month and a more appreciable gain after



# Heavy Duty Trailers

For Yard and Factory

► **PLATFORM TRAILER** 100 tons capacity. 32 wheels, solid rubber tires pressed on wheel centers. Each wheel turns independently. Four articulated trucks provide both side and end oscillation for walking action. Dual fifth wheel steer on two forward trucks.

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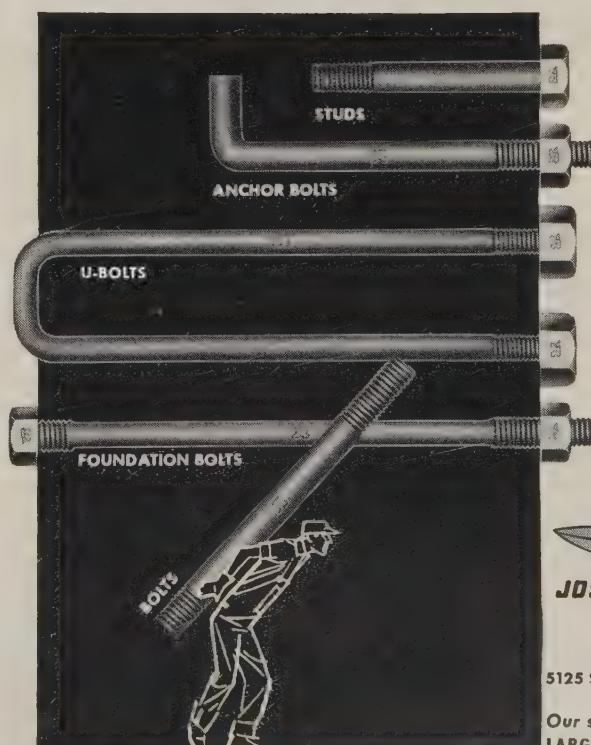
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- Regular, high tensile and stainless steels
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FREE WEIGHT TABLES OF STEEL

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**ANACONDA TYPE ANW-RUBBER-INSULATED CONTROL CABLE.** Peak reliability, outstanding heat resistance. Cable is also highly resistant to moisture, acids, alkalies, other chemicals. Unusual overload capacity and long-aging characteristics. Individual conductor covering and over-all jacket of neoprene.



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**ANACONDA THERMOPLASTIC CONTROL CABLE.** Multiple-use: aerially, in conduit, underground in ducts, direct burial in earth. Available with polyethylene (600 or 1000 volts) or Densheath\* vinyl resin (600 volts) insulation and Densheath over-all jacket. Densheath jackets over polyethylene-insulated conductors on request.



**ANACONDA TYPE PND CONTROL CABLE.** For general-purpose use where space is limited. Allows installation of a 12-conductor cable in conduit carrying a 6 or 7. Individual conductor covering of abrasion-, oil-, gasoline-resistant nylon. Over-all Densheath jacket.

## APPLICATION CHART FOR ANACONDA CONTROL CABLE

TYPE AND VOLTAGE RATING	CHARACTERISTICS	GENERAL APPLICATIONS	INSTALLATION METHODS
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<b>Rubber-Insulated 600-Volts</b>	Excellent moisture, heat resistance. Long-aging.	General-purpose and station control requirements.	Installed aerially, in conduit, underground in ducts—or buried directly in earth.
<b>Ozone-Resistant Rubber—Insulated 600-Volts</b>	Ozone-resistant. Proved moisture resistance, heat stability. Long-aging.		
<b>THERMOPLASTIC—Insulated Control Cables</b>			
<b>Polyethylene-Insulated 600-Volts</b>	Excellent moisture and chemical resistance. Highly resistant to electroendosmosis. Long-lived.	General-purpose control requirements.	Installed aerially, in conduit, underground in ducts—or buried directly in earth.
<b>DENSHEATH®-Insulated 600-Volts</b>	Thermoplastic cable. Excellent moisture and chemical resistance. Long-aging.	General-purpose control requirements where space is a limiting factor.	Installed aerially, in conduit or underground in ducts.
<b>Anaconda Type PND* Polyethylene-Insulated-Nylon Conductor Cover 600-Volts**</b>	Dependable chemical and abrasion resistance. Small diameter. Long-aging.	Station control requirements.	Installed aerially, in conduit, underground in ducts—or buried directly in earth.
<b>Polyethylene-Insulated 1000-Volts</b>	Peak moisture and chemical resistance. Heavy insulation thickness. Long-aging.		

\*\*IPCEA voltage rating is 300 volts.

\*Trademark.

Lead sheaths furnished on rubber-insulated control cables if requested.

Interlocked armor available for all types of control cable.

For full facts on any of Anaconda's complete line of control cables — including cables engineered for more specialized control requirements — see your Anaconda distributor or the Man from Anaconda. A comprehensive technical booklet on Anaconda Control Cables is yours for the asking. Write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N.Y.



SEE THE MAN FROM **ANACONDA**®  
FOR CONTROL CABLE

Labor Day holiday and vacations.

June bookings were up 8 to 10 per cent over those recorded in May with bars among the better moving products. Sustained demand from agricultural implement manufacturers in the Chicago district has been the chief support of the bar market in that section of the country; general usage appears stronger in all districts.

Prices remain highly competitive and in some districts, especially the Southwest—published schedules serve only as rough guides to the market.

U. S. Steel Supply Div., U. S. Steel Corp., has installed 68 infrared heaters in its Portland, Oreg., warehouse for added protection against corrosion of products. Humidity is carefully regulated, eliminating rust-causing moisture.

## Structural Shapes . . .

### Structural Shape Prices, Page 157

While structural steel contracts are comparatively light, considerable tonnage is being figured, particularly bridgework. Other public work, such as schools, is contributing substantially to market activity. There also is a fair amount of commercial construction before the market. Industrial building continues to lag.

Competition among fabricating shops is keen, particularly among the small fabricators who are not in position to figure on much bridge tonnage.

## STRUCTURAL SHAPES . . .

### STRUCTURAL STEEL PLACED

3200 tons, office building, Diesel Construction Co., 30 West Broadway, New York, to Dreier Structural Steel Co. Inc., Long Island City, N. Y.

1000 tons, three state bridges, Huntington Expressway, Providence-Cranston, R. I., to Tower Iron Works, Providence; M. A. Gammone Construction Co., Providence, general contractor.

300 tons, Nike installation, Alaska, to United Iron Works Inc., Seattle.

150 tons, remodeling at Boeing plant, and shop project, Ft. Lewis, to United Iron Works Inc., Seattle.

90 tons, replacement, spillway bridge, Rocky Reach Dam, Wenatchee, Wash., to Pacific Car & Foundry Co., Seattle.

### STRUCTURAL STEEL PENDING

640 tons, Public School No. 299, Brooklyn, Caristo Contracting Co., low on the general contract.

635 tons, Public School No. 298, Brooklyn, N. Y.; bids July 23.

650 tons, Students' Center, Manhattan College, New York; bids asked.

400 tons, dairy, Portland, Oreg.; bids in.

220 tons, also 140 tons of reinforcing, Washington State highway bridge, Whatcom County; general contract to Wilder Construction Co., Bellingham, Wash., low at \$535,322.

## Iron Ore Statistics—May, 1958

(Gross tons)

Stocks at U. S. Furnaces:	U. S. Ores		Canadian		Foreign Ores	Totals
	L. Superior	Other	L. Superior	Other		
Eastern .....	3,454,326	194,190	156,256	1,430,865	4,003,939	9,239,576
Pitts-Youngstown .....	7,397,146	55,341	445,500	1,625,670	3,366,322	12,889,979
Cleve.-Detroit .....	7,657,557	139,333	126,191	269,515	352,799	8,545,395
Chicago .....	8,149,377	(a)	(a)	.....	(a)	8,149,377
Southern .....	(a)	2,320,757	.....	(a)	1,498,446	3,819,203
Western .....	.....	737,969	.....	.....	.....	737,969
Total .....	26,658,406	3,447,590	727,947	3,326,050	9,221,506	43,381,499
At U. S. Docks:						
Lake Erie .....	3,369,509	.....	113,505	972,294	.....	4,455,308
Other .....	.....	.....	.....	(a)	(a)	(a)
Total .....	3,369,509	.....	113,505	972,294	.....	4,455,308
Total U. S. Stocks ..	30,027,915	3,447,590	841,452	4,298,344	9,221,506	47,836,807
Total U. S.-Canada ..	31,140,909	3,447,590	870,932	4,694,425	9,342,730	49,496,586

### CONSUMPTION OF IRON ORE—MAY, 1958

(Gross tons)

In U. S. Districts:	U. S. Ores		Canadian		Foreign Ores	Totals
	L. Superior	Other	L. Superior	Other		
Eastern .....	325,241	125,419	56,616	254,071	620,546	1,381,893
Pitts-Youngstown .....	1,215,625	109,040	70,843	270,989	305,126	1,971,623
Cleve.-Detroit .....	489,408	25,463	57,054	9,603	31,462	612,990
Chicago .....	1,188,346	(a)	(a)	.....	(a)	1,186,346
Southern .....	(a)	410,181	.....	(a)	152,495	562,676
Western .....	.....	501,292	.....	.....	.....	501,292
In U. S.						
Blast furnaces .....	2,685,121	879,420	151,596	322,979	426,296	4,465,412
Steel furnaces .....	111,740	55,922	422	13,959	288,583	470,626
Sintering (1) .....	406,231	236,044	32,495	197,725	394,750	1,267,245
Miscellaneous (2) .....	13,528	9	.....	.....	.....	13,537
Total in U. S. .....	3,216,620	1,171,395	184,513	534,663	1,109,629	6,216,820
In Canada						
Blast furnaces .....	218,194	.....	49,952	55,352	.....	323,498
Steel furnaces .....	16,754	.....	.....	6,549	11,360	34,663
Sintering (1) .....	60,737	.....	.....	18,970	332	80,039
Total U. S.-Canada .....	3,512,305	1,171,395	234,465	615,534	1,121,321	6,655,020

(1) Consumed in sintering plants not located at mine sites.

(2) Sold to nonreporting companies or used for purposes not listed.

(a) Small tonnage included in other districts to avoid disclosure.

Data from the American Iron Ore Association and the American Iron & Steel Institute.

"even a *little man* can move a *Sterling*"

**40% less lift  
60% less push**

• Smooth rolling Sterling barrows require a minimum of energy... even a little man can move 'em. Tests recently completed with three makes of wheelbarrows, each loaded with 320 lbs. of sand, show Sterlings require 40% less vertical force and 60% less horizontal force... an amazing performance record. The actual figures are shown at right.

• Yes — it pays to spend a few dollars more for easy rolling STERLING barrows. Write for catalog.

	Vertical Force Required	Horizontal Force Required
Wheelbarrow "A"	125 lbs.	22 lbs.
Wheelbarrow "B"	128 lbs.	20 lbs.
Sterling Barrow	77 lbs.	8 lbs.



STERLING NATIONAL  
INDUSTRIES, Inc.  
Milwaukee 14, Wis., U.S.A.



A8-4523-1/3

## REINFORCING BARS . . .

### REINFORCING BARS PLACED

1900 tons, postal annex building, Denver, to the Colorado Builders Supply Co., Denver; C. H. Leavell & Co., El Paso, Tex., general contractor; 2000 tons of fabricated structural steel to the Burkhardt Steel Co., Denver.

900 tons, Blue Cross Building, Federal Street, Boston, to U. S. Steel Supply Div., U. S. Steel Corp., Boston; George A. Fuller Co., Boston, general contractor.

870 tons, state highway structures, Huntington Expressway, Providence-Cranston, R. I., to Plantations Steel Co., Providence; M. A. Gammino Construction Co., Providence, general contractor.

475 tons, hospital building, Oak Ridge, Tenn., to Callaway Building Products Co., Knoxville, Tenn.; Foster & Creighton Co., Nashville, Tenn., general contractor.

300 tons, including structural, buildings, medium security prison, Enfield, Conn., to Scherer Steel Co., Hartford, Conn. (reinforcing), and Kilpatrick Iron Works (structural); Felix Buzzi & Son Inc., Torrington, Conn., general contractor.

### REINFORCING BARS PENDING

8000 tons, powerhouse, etc., Ice Harbor Dam, Snake River; also unstated tonnage of shapes for roof system and miscellaneous; bids invited July 25 for opening Sept. 18; U. S. Engineer, Walla Walla, Wash.

540 tons, Sec. 5, South Charles relief sewer, Boston-Brookline, Mass.; bids to the Massachusetts District Commission, Boston; also, 75 tons of steel sheet piling.

200 tons, Washington State, two highway spans, Okanogan County; bids to Olympia, Wash., July 29.

175 tons, four highway overpasses, Toole and Mineral Counties, Montana; bids to Helena, Mont., July 22 and 23.

150 tons, five highway bridges, Montana, Granite and Powell Counties; bids to Helena, Mont., July 22.

100 tons, Washington State, highway span, Cowitz County; bids to Olympia, Wash., July 29.

100 tons or more, Idaho, Payette River Bridge; general contract to J. O. Young & Sons, Nampa, Idaho, low at \$143,989.

100 tons or more, Idaho, three passes, Bannock County; general contract to Cherf Bros. & Sandkay Contractors Inc., Ephrata, Wash., low at \$989,883.

75 tons, also unstated structural for gates and equipment, Little Wood River Dam, near Carey, Idaho; Lewis Hopkins Co. and A. R. Sime, Pasco, Wash., joint low at \$1,093,945 to the Bureau of Reclamation, Rupert, Idaho.

## June Steel Output Rises

June production of ingots and steel for castings was the highest for any month so far this year. At 7,132,000 net tons, output compared with 6,301,159 in May and 9,391,402 in June a year ago.

Operations averaged 61.7 per cent, and the American Iron & Steel Institute's index (1947-49 average base) stood at 103.6, against 88.6 in May and 136.4 in June, 1957.

Second quarter output at 18,996,-150 tons was about 175,000 tons greater than the 18,790,857 pro-

duced in the first quarter but was down a little more than 10 million tons from the 28,998,505 produced in the second quarter last year.

The operating rate in the second quarter averaged 54.1 per cent, vs. 54.1 in the first quarter and 87.2 in the second quarter, 1957.

During the first six months of this year, the steelmaking furnaces poured 37,757,007 tons, vs. 60,583,547 in the comparable period of 1957 and 52,131,449 in the second half of last year.

The ingot rate in the first half averaged 54.1 per cent, vs. 91.5 a year ago.

## Steel Ingot Production—June, 1958

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL	
	Net tons	Per cent of capacity	Net tons	Per cent of capacity	Net tons	Per cent of capacity	Net tons	Per cent of capacity
1958								
January ..	6,085,124	58.6	121,338	35.5	547,440	44.8	6,753,902	56.5
February ..	5,252,112	56.0	81,597	26.4	448,614	40.6	5,782,323	53.6
March ....	5,598,944	53.9	122,317	35.8	533,361	43.6	6,254,622	52.3
1st Qtr. ..	16,936,180	56.2	325,252	32.8	1,529,425	43.1	18,790,857	54.1
April ....	4,875,619	48.5	109,433	33.1	547,939	46.3	5,532,991	47.8
*May ....	5,602,123	53.9	110,366	32.3	588,670	48.2	6,301,159	52.7
†June ....	6,382,000	63.5	88,000	26.6	662,000	56.0	7,132,000	61.7
†2nd Qtr. ..	16,859,742	55.3	307,799	30.7	1,792,609	50.1	18,996,150	54.1
†1st 6 Mo. ..	33,795,922	55.7	633,051	31.7	3,328,034	46.6	37,757,007	54.1
1957								
January ..	9,829,691	99.0	294,839	77.1	884,232	86.5	11,008,762	97.1
February ..	8,898,671	99.2	227,682	80.4	810,853	87.8	9,937,206	97.6
March ....	9,442,164	95.1	275,156	71.9	871,754	85.2	10,589,074	93.4
1st Qtr. ..	28,170,526	97.7	847,677	76.3	2,566,839	86.4	31,585,042	96.0
April ....	8,820,328	91.8	231,731	62.6	762,721	77.1	9,814,780	89.5
May .....	8,842,707	89.1	201,864	52.8	747,752	73.1	9,792,323	86.4
June .....	8,498,903	88.4	210,915	57.0	681,584	68.9	9,391,402	85.6
2nd Qtr. ..	26,161,938	89.8	644,510	57.4	2,192,057	73.0	28,998,505	87.2
1st 6 Mo. ..	54,332,464	93.7	1,492,187	66.8	4,758,896	79.7	60,583,547	91.5
July .....	8,086,519	81.4	194,638	50.9	627,575	61.4	8,908,732	78.6
August .....	8,297,172	83.6	204,723	53.5	731,995	71.6	9,233,890	81.5
September ..	8,135,139	84.7	185,967	50.2	656,800	66.4	8,977,906	81.8
3rd Qtr. ..	24,518,830	83.2	585,328	51.5	2,016,370	66.4	27,120,528	80.6
9 Mo. ....	78,851,294	90.2	2,077,515	61.7	6,775,266	75.2	87,704,075	87.9
October .....	8,348,522	84.1	154,577	40.4	694,618	67.9	9,197,717	81.1
November .....	7,674,698	79.9	134,709	36.4	583,512	59.0	8,392,919	76.5
December .....	6,783,262	68.3	108,237	28.3	528,686	51.7	7,420,285	65.5
4th Qtr. .....	22,806,482	77.4	397,623	35.0	1,806,816	59.5	25,010,921	74.4
2nd 6 Mo. ..	47,325,312	80.3	982,951	43.3	3,823,186	63.0	52,131,449	77.5
Total .....	101,657,776	87.0	2,475,138	54.9	8,582,082	71.3	112,714,996	84.5

Note—The percentages of capacity operated are based on annual capacities as of Jan. 1, 1958, as follows: Open hearth 122,321,830 net tons; bessemer 4,027,000 net tons; oxygen process, electric and crucible 14,398,740 net tons. Total for 1958, 140,742,570 net tons. For 1957, the capacity tonnages are: Open hearth 116,912,410 net tons; bessemer 4,505,000 net tons; oxygen process, electric and crucible 12,041,740 net tons. Total for 1957, 133,459,150 net tons.

\*Revised. †Preliminary.

### DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

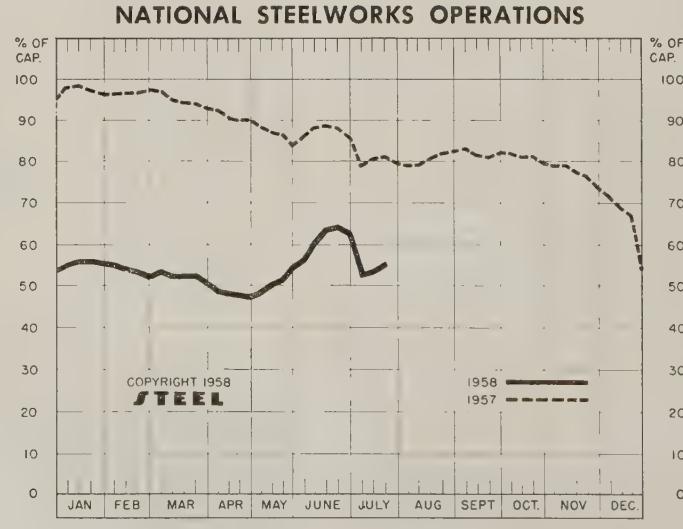
	Week Ended July 20	Change 1957	Same Week 1955
Pittsburgh .....	48	0*	83.5
Chicago .....	62	+ 0.5*	84
Mid-Atlantic .....	63	+ 2	90
Youngstown .....	49	+ 7	79
Wheeling .....	73.5	- 2	77
Cleveland .....	48.5	+ 11	78
Buffalo .....	44	+ 5	88
Birmingham .....	53.5	+ 3	91.5
New England .....	30	0	50
Cincinnati .....	44	- 23.5*	62
St. Louis .....	92.5	+ 6	84.5
Detroit .....	58.5	+ 1	86.5
Western .....	67	0*	99
National Rate ..	55.5	+ 2	81
			14.5

### INGOT PRODUCTION\*

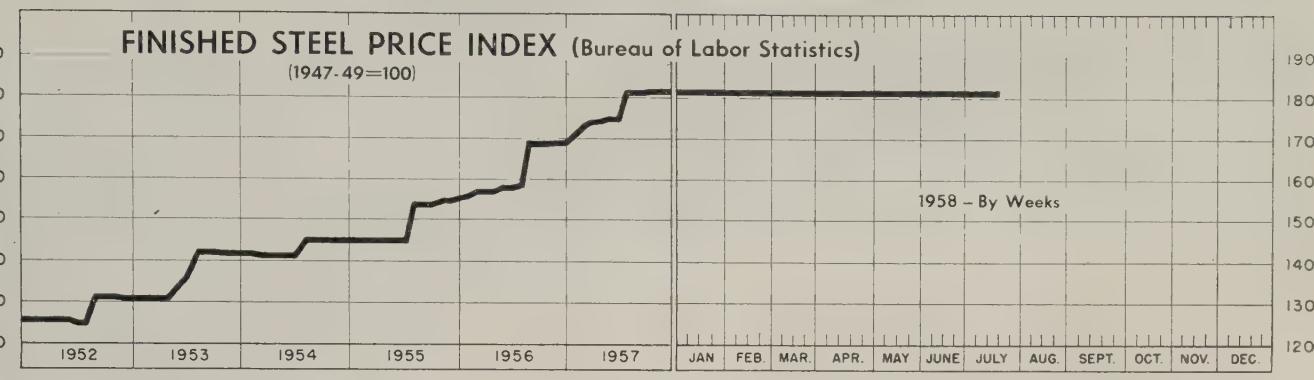
	Week Ended July 20	Month Ago	Year A/o
INDEX .....	94.3†	89.8	109.0
(1947-49=100)			
NET TONS ...	1,515†	1,442	1,751
(In thousands)			2,030

\*Change from preceding week's revised rate.  
†Estimated. †American Iron & Steel Institute.  
Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

### NATIONAL STEELWORKS OPERATIONS



# Price Indexes and Composites



July 15, 1958

Week Ago

Month Ago

June Avg

Year Ago

**181.5**

**181.5**

**181.5**

**181.5**

**181.5**

## AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended July 15

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1 . . .	\$5.600	Bars, Reinforcing . . . . .	6.135
Rails, Light, 40 lb . . . .	7.067	Bars, C.F., Carbon . . . . .	10.360
Tie Plates . . . . .	6.600	Bars, C.F., Alloy . . . . .	13.875
Axles, Railways . . . . .	9.825	Bars, C.F., Stainless, 302 (lb) . . . . .	0.553
Wheels, Freight Car, 33 in. (per wheel) . . . . .	60.000	Sheets, H.R., Carbon . . . . .	6.175
Plates, Carbon . . . . .	6.150	Sheets, C.R., Carbon . . . . .	7.075
Structural Shapes . . . . .	5.942	Sheets, Galvanized . . . . .	8.270
Bars, Tool Steel, Carbon (lb) . . . . .	0.535	Sheets, C.R., Stainless, 302 (lb) . . . . .	0.683
Bars, Tool Steel, Alloy, Oil Hardening Die (lb) . . . .	0.650	Sheets, Electrical . . . . .	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb) . . . .	1.355	Strip, C.R., Carbon . . . . .	9.214
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb) . . . . .	1.850	Strip, C.R., Stainless, 430 (lb) . . . . .	0.493
Bars, H.R., Alloy . . . . .	10.525	Strip, H.R., Carbon . . . . .	6.075
Bars, H.R., Stainless, 303 (lb) . . . . .	0.525	Pipe, Black, Butt-weld (100 ft) . . . . .	19.814
Bars, H.R., Carbon . . . . .	6.425	Pipe, Galv., Butt-weld (100 ft) . . . . .	23.264
		Pipe, Line (100 ft) . . . . .	199.023
		Casing, Oil Well, Carbon (100 ft) . . . . .	194.499
		Casing, Oil Well, Alloy (100 ft) . . . . .	304.610

Tubes, Boiler (100 ft) . . .	49.130	Black Plate, Cannaking Quality (95 lb base box) . .	7.583
Tubing, Mechanical, Car- bon (100 ft) . . . . .	24.953	Wire, Drawn, Carbon . . . .	10.225
Tubing, Mechanical, Stain- less, 304 (100 ft) . . . .	205.608	Wire, Drawn, Stainless, 430 (lb) . . . . .	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box) . . . .	9.783	Bale Ties (bundles) . . . . .	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box) .	8.483	Nails, Wire, 8d Common . . .	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll) . . . . .	21.737

## STEEL's FINISHED STEEL PRICE INDEX\*

	July 16 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100) ..	239.15	239.15	239.15	239.15	189.33
Index in cents per lb .. .	6.479	6.479	6.479	6.479	5.129

## STEEL's ARITHMETICAL PRICE COMPOSITES\*

Finished Steel, NT . . . . .	\$145.42	\$145.42	\$145.42	\$146.19	\$114.84
No. 2 Fdry Pig Iron, GT..	66.49	66.49	66.49	66.27	56.54
Basic Pig Iron, GT .. .	65.99	65.99	65.99	65.68	56.04
Malleable Pig Iron, GT ..	67.27	67.27	67.27	67.06	57.27
Steelmaking Scrap, GT ..	36.67	35.83†	35.00	54.33	43.42

\*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54;  
of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130. †Revised.

## Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	July 16 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh . . .	5.425	5.425	5.425	5.425	4.15
Bars, H.R., Chicago . . . .	5.425	5.425	5.425	5.425	4.15
Bars, H.R., deld. Philadelphia .	5.725	5.725	5.725	5.715	5.302
Bars, C.F., Pittsburgh . . .	7.30*	7.30*	7.30*	7.30*	5.20
Shapes, Std., Pittsburgh . .	5.275	5.275	5.275	5.275	4.10
Shapes, Std., Chicago . . .	5.275	5.275	5.275	5.275	4.10
Shapes, deld., Philadelphia .	5.545	5.545	5.545	5.585	4.38
Plates, Pittsburgh . . . . .	5.10	5.10	5.10	5.10	4.10
Plates, Chicago . . . . .	5.10	5.10	5.10	5.10	4.10
Plates, Coatesville, Pa. . .	5.10	5.10	5.10	5.50	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	5.10	4.10
Plates, Clayton, Del. . . .	5.10	5.10	5.10	5.70	4.55
Sheets, H.R., Pittsburgh . .	4.925	4.925	4.925	4.925	3.925
Sheets, H.R., Chicago . . . .	4.925	4.925	4.925	4.925	3.925
Sheets, C.R., Pittsburgh . .	6.05	6.05	6.05	6.05	4.775
Sheets, C.R., Chicago . . . .	6.05	6.05	6.05	6.05	4.775
Sheets, C.R., Detroit . . . .	6.05	6.05	6.05	6.05-6.15	4.975
Sheets, Galv., Pittsburgh . .	6.60	6.60	6.60	5.275	
Strip, H.R., Pittsburgh . . .	4.925	4.925	4.925	4.925	3.975-4.425
Strip, H.R., Chicago . . . .	4.925	4.925	4.925	4.925	3.925
Strip, C.R., Pittsburgh . . .	7.15	7.15	7.15	5.45-5.95	
Strip, C.R., Chicago . . . .	7.15	7.15	7.15	7.15	5.70
Strip, C.R., Detroit . . . .	7.15	7.15	7.15	7.25	5.45-6.05
Wire, Basic, Pittsburgh . . .	7.65	7.65	7.65	7.65	5.475-5.525
Nails, Wire, Pittsburgh . . .	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb/box), Pitts.	\$10.30	\$10.30	\$10.30	\$10.30	\$8.95

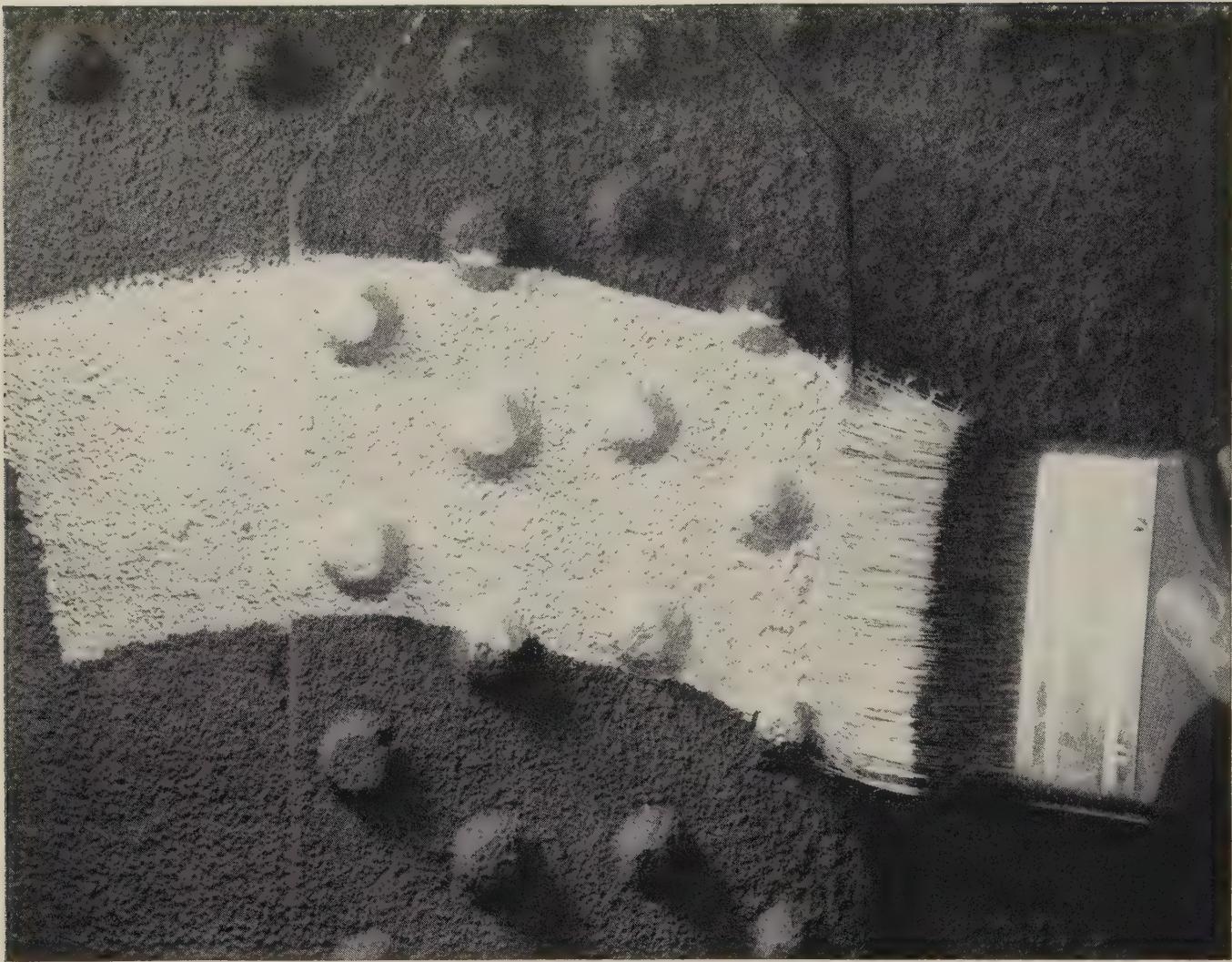
\*Including 0.35c for special quality.

## SEMITRANSHINING STEEL

Billets, forging, Pitts. (NT)	\$96.00	\$96.00	\$96.00	\$96.00	\$75.50
Wire rods $\frac{7}{8}$ - $\frac{5}{8}$ " Pitts. . . .	6.15	6.15	6.15	4.525	

## COKE, Net Ton

Beehive, Furn., Connsvl. . .	\$15.25	\$15.25	\$15.25	\$15.25	\$14.75
Beehive, Fdry., Connsvl. . .	18.25	18.25	18.25	18.25	16.75



# NEW GULF METALCOAT A protects against rust up to 10 times longer

Now you've got a stronger ally than ever, in the war against rust and corrosion. New Gulf Metalcoat A . . . the revolutionary new aluminum pigmented liquid coating . . . protects metal surfaces up to 10 times longer—under the most severe exposures in industrial and marine atmospheres.

Salt spray tests at Wrightsville Beach, N. C. proved that new Gulf Metalcoat A gives 7 to 10 times greater protection than competitive products. And before its introduction, nine years of intensive exposure tests proved its extraordinary rust preventive properties.

#### Where and how to use New Gulf Metalcoat A

Outdoor piping, vents, fences, transportation equipment, bridges, ships, metal roofs, stacks—practically any type of steel structure can be pro-

tected longer with New Gulf Metalcoat A. Economically, too!

Brush, dip or spray either smooth or rough metal surfaces. In cases where only temporary protection is desired, New Gulf Metalcoat A can be removed easily with a petroleum solvent.

Your Gulf Sales Engineer can show you how much less it costs to get longer protection against rust and corrosion, with New Gulf Metalcoat A. Just call him, at the nearest Gulf office.

#### GULF OIL CORPORATION

Dept. DM, Gulf Building  
Pittsburgh 30, Pa.



# Steel Prices

Mill prices as reported to STEEL, July 16, cents per pound except as otherwise noted. Changes shown in *italics*. Code number following mill points indicate producing company. Key to producers, page 158; footnotes, page 160.

## SEMI-FINISHED

**INGOTS, Carbon, Forging (INT)**  
Munhall, Pa. U5 ..... \$73.50

## INGOTS, Alloy (INT)

Detroit S41 ..... \$77.00  
Farrell, Pa. S3 ..... 77.00  
Lowellville, O. S3 ..... 77.00  
Midland, Pa. C18 ..... 77.00  
Munhall, Pa. U5 ..... 77.00  
Sharon, Pa. S3 ..... 77.00

## BILLETS, BLOOMS & SLABS

### Carbon, Rolling (INT)

Bessemer, Pa. U5 ..... \$77.50  
Buffalo R2 ..... 77.50  
Clairton, Pa. U5 ..... 77.50  
Ensley, Ala. T2 ..... 77.50  
Fairfield, Ala. T2 ..... 77.50  
Fontana, Calif. K1 ..... 77.50  
Gary, Ind. U5 ..... 77.50  
Johnstown, Pa. B3 ..... 77.50  
Lackawanna, N.Y. B2 ..... 77.50  
Munhall, Pa. U5 ..... 77.50  
Owensboro, Ky. G8 ..... 77.50  
S.Chicago, Ill. R2, U5 ..... 77.50  
S.Duquesne, Pa. U5 ..... 77.50  
Sterling, Ill. N15 ..... 77.50  
Youngstown R2 ..... 77.50

### Carbon, Forging (INT)

Bessemer, Pa. U5 ..... \$96.00  
Buffalo R2 ..... 96.00  
Canton, O. R2 ..... 98.50  
Clairton, Pa. U5 ..... 96.00  
Conshohocken, Pa. A3 ..... 101.00  
Ensley, Ala. T2 ..... 96.00  
Fairfield, Ala. T2 ..... 96.00  
Fontana, Calif. K1 ..... 105.50  
Gary, Ind. U5 ..... 96.00  
Geneva, Utah C11 ..... 96.00  
Houston S5 ..... 101.00  
Johnstown, Pa. B2 ..... 96.00  
Lackawanna, N.Y. B2 ..... 96.00  
LosAngeles B3 ..... 96.00  
Midland, Pa. C18 ..... 105.50  
Munhall, Pa. U5 ..... 96.00  
Owensboro, Ky. G8 ..... 96.00  
Seattle B3 ..... 109.50  
Sharon, Pa. S3 ..... 96.00  
S.Chicago R2, U5, W14 ..... 96.00  
S.Duquesne, Pa. U5 ..... 96.00  
S.SanFrancisco B3 ..... 105.50  
Warren, O. C17 ..... 96.00

## Alloy, Forging (INT)

Bethlehem, Pa. B2 ..... \$114.00  
Bridgeport, Conn. C32 ..... 114.00  
Buffalo R2 ..... 114.00  
Canton, O. R2, T7 ..... 114.00  
Conshohocken, Pa. A3 ..... 121.00  
Detroit S41 ..... 114.00  
Economy, Pa. B14 ..... 114.00  
Farrell, Pa. S3 ..... 114.00  
Fontana, Calif. K1 ..... 135.00  
Gary, Ind. U5 ..... 114.00  
Houston S5 ..... 119.00  
Ind.Harbor, Ind. Y1 ..... 114.00  
Johnstown, Pa. B2 ..... 114.00  
Lackawanna, N.Y. B2 ..... 114.00  
LosAngeles B3 ..... 114.00  
Lowellville, O. S3 ..... 114.00  
Massillon, O. R2 ..... 114.00  
Midland, Pa. C18 ..... 114.00  
Munhall, Pa. U5 ..... 114.00  
Owensboro, Ky. G8 ..... 114.00  
Sharon, Pa. S3 ..... 114.00  
S.Chicago R2, U5, W14 ..... 114.00  
S.Duquesne, Pa. U5 ..... 114.00  
Struthers, O. Y1 ..... 114.00  
Warren, O. C17 ..... 114.00

## ROUNDS, SEAMLESS TUBE (INT)

Buffalo R2 ..... \$117.50  
Canton, O. R2 ..... 120.00  
Cleveland R2 ..... 117.50  
Gary, Ind. U5 ..... 117.50  
S.Chicago, Ill. R2, W14 ..... 117.50  
S.Duquesne, Pa. U5 ..... 117.50  
Warren, O. C17 ..... 117.50

## SKELP

Aliquippa, Pa. J5 ..... 5.075  
Munhall, Pa. U5 ..... 4.875  
Pittsburgh J5 ..... 5.075  
Warren, O. R2 ..... 4.875  
Youngstown R2, U5 ..... 4.875

## WIRE RODS

AlabamaCity, Ala. R2 ..... 6.15  
Aliquippa, Pa. J5 ..... 6.15  
Alton, Ill. L1 ..... 6.35  
Buffalo W12 ..... 6.15  
Cleveland A7 ..... 6.15  
Donora, Pa. A7 ..... 6.15  
Fairfield, Ala. T2 ..... 6.15  
Houston S5 ..... 6.40  
IndianaHarbor, Ind. Y1 ..... 6.15  
Johnstown, Pa. B2 ..... 6.15  
Joliet, Ill. A7 ..... 6.15  
KansasCity, Mo. S5 ..... 6.40  
Kokomo, Ind. C16 ..... 6.25  
LosAngeles B3 ..... 6.95  
Minnequa, Colo. C10 ..... 6.40

Monessen, Pa. P7 ..... 6.15	Cleveland J5, R2 ..... 5.20	Cleveland (9) R2 ..... 5.425	Portland, Oreg. O4 ..... 6.175
N.Tonawanda, N.Y. B11 ..... 6.15	Coatesville, Pa. L7 ..... 5.10	Ecorse, Mich. (9) G5 ..... 5.425	SanFrancisco S7 ..... 6.275
Pittsburg, Calif. C11 ..... 6.95	Conshohocken, Pa. A3 ..... 5.10	Emeryville, Calif. J7 ..... 6.175	Seattle B3 ..... 6.175
Portsmouth, O. P12 ..... 6.15	Ecorse, Mich. G5 ..... 5.10	Fairfield, Ala. (9) T2 ..... 5.425	
Roebeling, N.J. R5 ..... 6.25	Fairfield, Ala. T2 ..... 5.10	Fairless, Pa. (9) U5 ..... 5.575	
S.Chicago, Ill. R2 ..... 6.15	Fontana, Calif. (30) K1 ..... 5.90	Fontana, Calif. (9) K1 ..... 6.125	
SparrowsPoint, Md. B2 ..... 6.25	Gary, Ind. U5 ..... 5.10	Gary, Ind. (9) U5 ..... 5.425	
Sterling, Ill. (1) N15 ..... 6.15	Geneva, Utah C11 ..... 5.10	Houston (9) S5 ..... 5.675	
Sterling, Ill. N15 ..... 6.25	GraniteCity, Ill. G4 ..... 5.20	Ind.Harbor(9) I-2, Y1, Y1 ..... 5.425	
Struthers, O. Y1 ..... 6.15	Harrisburg, Pa. P4 ..... 5.10	Johnstown, Pa. (9) B2 ..... 5.425	
Worcester, Mass. A7 ..... 6.45	Houston S5 ..... 5.20	Joliet, Ill. P22 ..... 5.425	
	Ind.Harbor, Ind. I-2, Y1 ..... 5.10	KansasCity, Mo. (9) S5 ..... 5.675	
	Lackawanna, Pa. B2 ..... 5.10	Lackawanna (9) B2 ..... 5.425	
	Lackawanna, N.Y. B2 ..... 5.10	LosAngeles (9) B3 ..... 6.125	
	LoneStar, Tex. L6 ..... 5.20	Midland, Pa. (23) C18 ..... 5.725	
	Mansfield, O. E6 ..... 5.10	Milton, Pa. M18 ..... 5.575	
	Minnequa, Colo. C10 ..... 5.95	Minnequa, Colo. C10 ..... 5.875	
	Munhall, Pa. U5 ..... 5.10	Niles, Calif. P1 ..... 6.125	
	Newport, Ky. A2 ..... 5.10	N.T'wanda, N.Y. (23) B11 ..... 5.775	
	Pittsburgh J5 ..... 5.10	Owensboro, Ky. (9) G8 ..... 5.425	
	Riverdale, Ill. A1 ..... 5.10	Pittsburg, Calif. (9) C11, L12 ..... 6.125	
	Seattle B3 ..... 6.00	Portland, Oreg. O4 ..... 6.175	
	Sharon, Pa. S3 ..... 5.10	Seattle B3, N14 ..... 6.175	
	S.Chicago, Ill. U5, W14 ..... 5.10	S.C'hgo'g (9) R2, U5, W14 ..... 5.425	
	SparrowsPoint, Md. B2 ..... 5.10	S.Duquesne, Pa. (9) U5 ..... 5.425	
	Steubenville, O. W10 ..... 5.10	S.SanFran, Calif. (9) B3 ..... 6.175	
	Warren, O. R2 ..... 5.10	Sterling, Ill. (1) (9) N15 ..... 5.425	
	Youngstown U5, Y1 ..... 5.10	Sterling, Ill. (9) N15 ..... 5.525	
		Struthers, O. (9) Y1 ..... 5.425	
		Tonawanda, N.Y. B12 ..... 5.425	
		Torrance, Calif. (9) C11 ..... 6.125	
		Youngstown (9) R2, U5 ..... 5.425	

## STRUCTURALS

### Carbon Steel Std. Shapes

AlabamaCity, Ala. R2 ..... 5.275	Atlanta A1 ..... 5.475	Atlanta (9) A1 ..... 5.75	Bar SHAPES, Hot-Rolled Alloy
Atlanta A1 ..... 5.475	Aliquippa, Pa. J5 ..... 5.275	Bar, C.F., Leaded Alloy	
Clairton, Pa. U5 ..... 77.50	Bessemer, Ala. T2 ..... 5.275	(Including leaded extra)	
Ensley, Ala. T2 ..... 77.50	Bethlehem, Pa. B2 ..... 5.325	Ambridge, Pa. W18 ..... 9.925	
Fairfield, Ala. T2 ..... 77.50	Clairton, Pa. U5 ..... 5.275	BeaverFalls, Pa. M12, R2 ..... 9.925	
Fontana, Calif. K1 ..... 88.00	Birmingham C15 ..... 5.275	Camden, N.J. P13 ..... 9.925	
Gary, Ind. U5 ..... 77.50	Bridgeton, Conn. C32 ..... 5.275	Cleveland C20 ..... 9.925*	
Johnstown, Pa. B3 ..... 77.50	Bridgeport, Conn. C32 ..... 5.275	Chicago W18 ..... 9.925	
Lackawanna, N.Y. B2 ..... 77.50	Clairton, Pa. U5 ..... 5.275	Elyria, O. W8 ..... 9.925	
Munhall, Pa. U5 ..... 77.50	Canton, O. R2, T7 ..... 5.275	LosAngeles P2, S30 ..... 11.40*	
Owensboro, Ky. G8 ..... 77.50	Claymont, Del. C22 ..... 5.275	Monaca, Pa. S17 ..... 9.925	
S.Chicago, Ill. R2, U5 ..... 77.50	Coatesville, Pa. L7 ..... 5.275	Newark, N.J. W18 ..... 10.10	
S.Duquesne, Pa. U5 ..... 77.50	Conshohocken, Pa. A3 ..... 5.275	SpringCity, Pa. K3 ..... 10.10	
Sterling, Ill. N15 ..... 77.50	Cleveland J5, R2 ..... 5.275	Warren, O. C17 ..... 9.925	
Youngstown R2 ..... 77.50	Clymont, Del. C22 ..... 5.275		

### Wide Flange

Bethlehem, Pa. B2 ..... 5.325	Clairton, Pa. U5 ..... 5.275	PLATES, Carbon Abras. Resist.
Clairton, Pa. U5 ..... 5.275	Canton, O. R2, T7 ..... 5.275	PLATES, Carbon, Wrought Iron
Canton, O. R2 ..... 98.50	Claymont, Del. C22 ..... 5.275	PLATES, H.S., L.A.
Conshohocken, Pa. A3 ..... 101.00	Coatesville, Pa. L7 ..... 5.275	PLATES, H.S., L.A.
Ensley, Ala. T2 ..... 96.00	Claymont, Del. C22 ..... 5.275	PLATES, ALLOY
Fairfield, Ala. T2 ..... 96.00	Cleveland J5, R2 ..... 5.275	PLATES, ALLOY
Fontana, Calif. K1 ..... 105.50	Clymont, Del. C22 ..... 5.275	PLATES, ALLOY
Gary, Ind. U5 ..... 96.00	Coatesville, Pa. L7 ..... 5.275	PLATES, ALLOY
Geneva, Utah C11 ..... 96.00	Claymount, Del. C22 ..... 5.275	PLATES, ALLOY
Houston S5 ..... 101.00	Coatesville, Pa. L7 ..... 5.275	PLATES, ALLOY
Johnstown, Pa. B2 ..... 96.00	Claymount, Del. C22 ..... 5.275	PLATES, ALLOY
Lackawanna, N.Y. B2 ..... 96.00	Cleveland J5, R2 ..... 5.275	PLATES, ALLOY
LosAngeles B3 ..... 96.00	Clymont, Del. C22 ..... 5.275	PLATES, ALLOY
Midland, Pa. C18 ..... 105.50	Coatesville, Pa. L7 ..... 5.275	PLATES, ALLOY
Munhall, Pa. U5 ..... 96.00	Claymount, Del. C22 ..... 5.275	PLATES, ALLOY
Owensboro, Ky. G8 ..... 96.00	Cleveland J5, R2 ..... 5.275	PLATES, ALLOY
Seattle B3 ..... 109.50	Clymont, Del. C22 ..... 5.275	PLATES, ALLOY
Sharon, Pa. S3 ..... 96.00	Coatesville, Pa. L7 ..... 5.275	PLATES, ALLOY
S.Chicago R2, U5, W14 ..... 96.00	Claymount, Del. C22 ..... 5.275	PLATES, ALLOY
S.Duquesne, Pa. U5 ..... 96.00	Cleveland J5, R2 ..... 5.275	PLATES, ALLOY
S.SanFrancisco B3 ..... 105.50	Clymont, Del. C22 ..... 5.275	PLATES, ALLOY
Warren, O. C17 ..... 96.00	Coatesville, Pa. L7 ..... 5.275	PLATES, ALLOY

### H.S., L.A. Std. Shapes

Aliquippa, Pa. J5 ..... 6.55	Clairton, Pa. U5 ..... 7.25	PLATES, H.S., L.A.
Bessemer, Ala. T2 ..... 6.55	Canton, O. R2, T7 ..... 6.55	PLATES, H.S., L.A.
Canton, O. R2, T7 ..... 114.00	Claymont, Del. C22 ..... 6.55	PLATES, H.S., L.A.
Conshohocken, Pa. A3 ..... 121.00	Coatesville, Pa. L7 ..... 6.55	PLATES, H.S., L.A.
Detroit S41 ..... 114.00	Economy, Pa. B14 ..... 6.55	PLATES, H.S., L.A.
Economy, Pa. B14 ..... 114.00	Geneva, Utah C11 ..... 6.55	PLATES, H.S., L.A.
Farrell, Pa. S3 ..... 114.00	Houston S5 ..... 6.55	PLATES, H.S., L.A.
Fontana, Calif. K1 ..... 135.00	Ind.Harbor, Ind. I-2, Y1, Y1 ..... 6.55	PLATES, H.S., L.A.
Gary, Ind. U5 ..... 114.00	KansasCity, Mo. S5 ..... 6.55	PLATES, H.S., L.A.
Houston S5 ..... 119.00	Lackawanna, N.Y. B2 ..... 6.475	PLATES, H.S., L.A.
Ind.Harbor, Ind. Y1 ..... 114.00	Lowellville, O. S3 ..... 6.475	PLATES, H.S., L.A.
Johnstown, Pa. B2 ..... 114.00	Munhall, Pa. U5 ..... 6.475	PLATES, H.S., L.A.
Lackawanna, N.Y. B2 ..... 114.00	Newark, N.J. W18 ..... 7.75	PLATES, H.S., L.A.
LosAngeles B3 ..... 114.00	OhioCity, O. R2 ..... 6.475	PLATES, H.S., L.A.
Lowellville, O. S3 ..... 114.00	Seattle B3 ..... 6.475	PLATES, H.S., L.A.
Massillon, O. R2 ..... 114.00	Sharon, Pa. S3 ..... 6.475	PLATES, H.S., L.A.
Midland, Pa. C18 ..... 114.00	SparrowsPoint, Md. B2 ..... 6.475	PLATES, H.S., L.A.
Munhall, Pa. U5 ..... 114.00	Youngstown Y1 ..... 6.475	PLATES, H.S., L.A.

### H.S., L.A. Wide Flange

Bethlehem, Pa. B2 ..... 7.80	Clairton, Pa. U5 ..... 7.75	PLATES, ALLOY
Clairton, Pa. U5 ..... 7.75	Canton, O. R2, T7 ..... 7.75	PLATES, ALLOY
Canton, O. R2, T7 ..... 114.00	Claymount, Del. C22 ..... 7.75	PLATES, ALLOY
Conshohocken, Pa. A3 ..... 121.00	Coatesville, Pa. L7 ..... 7.75	PLATES, ALLOY
Detroit S41 ..... 114.00	Economy, Pa. B14 ..... 7.75	PLATES, ALLOY
Economy, Pa. B14 ..... 114.00	Geneva, Utah C11 ..... 7.75	PLATES, ALLOY
Farrell, Pa. S3 ..... 114.00	Houston S5 ..... 7.75	PLATES, ALLOY
Fontana, Calif. K1 ..... 135.00	Ind.Harbor, Ind. I-2, Y1, Y1 ..... 7.75	PLATES, ALLOY
Gary, Ind. U5 ..... 114.00	KansasCity, Mo. S5 ..... 7.75	PLATES, ALLOY
Houston S5 ..... 119.00	Lackawanna, N.Y. B2 ..... 6.475	PLATES, ALLOY
Ind.Harbor, Ind. Y1 ..... 114.00	Lowellville, O. S3 ..... 6.475	PLATES, ALLOY
Johnstown, Pa. B2 ..... 114.00	Munhall, Pa. U5 ..... 6.475	PLATES, ALLOY
Lackawanna, N.Y. B2 ..... 114.00	Newark, N.J. W18 ..... 7.75	PLATES, ALLOY
LosAngeles B3 ..... 114.00	OhioCity, O. R2 ..... 6.475	PLATES, ALLOY
Lowellville, O. S3 ..... 114.00	Seattle B3 ..... 6.475	PLATES, ALLOY
Massillon, O. R2 ..... 114.00	Sharon, Pa. S3 ..... 6.475	PLATES, ALLOY
Midland, Pa. C18 ..... 114.00	SparrowsPoint, Md. B2 ..... 6.475	PLATES, ALLOY
Munhall, Pa. U5 ..... 114.00	Youngstown Y1 ..... 6.475	PLATES, ALLOY

### FLOOR PLATES

Cleveland J5 ..... 6.175	Conshohocken, Pa. A3 ..... 6.175	PLATES, Ingot Iron
Conshohocken, Pa. A3 ..... 6.175	Ind.Harbor, Ind. I-2 ..... 6.175	PLATES, Ingot Iron
Ind.Harbor, Ind. I-2 ..... 6.175	Munhall, Pa. U5 ..... 6.175	PLATES, Ingot Iron
Munhall, Pa. U5 ..... 6.175	S.Chiago, Ill. U5, W14 ..... 6.175	PLATES, Ingot Iron
S.Chiago, Ill. U5, W14 ..... 6.175	S.Chiago, Ill. U5, W14 ..... 6.175	PLATES, Ingot Iron
S.Duquesne, Pa. U5 ..... 117.50	S.Chiago, Ill. U5, W14 ..... 6.175	PLATES, Ingot Iron
Struthers, O. Y1 ..... 114.00	S.Chiago, Ill. U5, W14 ..... 6.175	PLATES, Ingot Iron
Warren, O. C17 ..... 117.50	S.Chiago, Ill. U5, W14 ..... 6.175	PLATES, Ingot Iron

### STEEL SHEET PILING

Bethlehem, Pa. B2 ..... 5.325	Lackawanna, N.Y. B2 ..... 6.225	PILING
Lackawanna, N.Y. B2 ..... 5.325	Munhall, Pa. U5 ..... 6.225	BEARING PILES
Munhall, Pa. U5 ..... 5.275	S.Chiago, Ill. U5, W14 ..... 6.225	BEARING PILES
S.Chiago, Ill. U5, W14 ..... 6.225	S.Chiago, Ill. U5, W14 ..... 6.225	BEARING PILES
S.Duquesne, Pa. U5 ..... 117.50	S.Chiago, Ill. U5, W14 ..... 6.225	BEARING PILES
Struthers, O. Y1 ..... 114.00	S.Chiago, Ill. U5, W14 ..... 6.225	BEARING PILES
Warren, O. C17 ..... 117.50	S.Chiago, Ill. U5, W14 ..... 6.225	BEARING PILES

### PLATES

Aliquippa, Pa. J5 ..... 5.10	Ala.City, Ala. (9) R2 ..... 5.425	PLATES, Carbon Steel
Aliquippa, Pa. J5 ..... 5.10	Aliquippa, Pa. (9) J5 ..... 5.425	PLATES, Carbon Steel
Alton, Ill. L1 ..... 5.65	Alton, Ill. L1 ..... 5.625	PLATES, Carbon Steel
Buffalo W12 ..... 6.15	Atlanta (9) A1 ..... 5.625	PLATES, Carbon Steel
Cleveland A7 ..... 6.15	Bessemer, Ala. (9) T2 ..... 5.625	PLATES, Carbon Steel
Donora, Pa. A7 ..... 6.15	Birmingham (9) C15 ..... 5.625	PLATES, Carbon Steel
Fairfield, Ala. T2 ..... 6.15	Buffalo (9) R2 ..... 5.625	PLATES, Carbon Steel
Houston S5 ..... 6.40	Clairemont, Del. C22 ..... 5.625	PLATES, Carbon Steel
IndianaHarbor, Ind. Y1 ..... 6.15	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Johnstown, Pa. B2 ..... 6.15	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Joliet, Ill. A7 ..... 6.15	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
KansasCity, Mo. S5 ..... 6.40	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Kokomo, Ind. C16 ..... 6.25	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
LosAngeles B3 ..... 6.95	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Minnequa, Colo. C10 ..... 6.40	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel

### PLATES, Carbon Steel

AlabamaCity, Ala. R2 ..... 6.15	Ala.City, Ala. (9) R2 ..... 5.425	PLATES, Carbon Steel
AlabamaCity, Ala. R2 ..... 6.15	Aliquippa, Pa. (9) J5 ..... 5.425	PLATES, Carbon Steel
Alton, Ill. L1 ..... 5.65	Alton, Ill. L1 ..... 5.625	PLATES, Carbon Steel
Buffalo W12 ..... 6.15	Atlanta (9) A1 ..... 5.625	PLATES, Carbon Steel
Cleveland A7 ..... 6.15	Bessemer, Ala. (9) T2 ..... 5.625	PLATES, Carbon Steel
Donora, Pa. A7 ..... 6.15	Birmingham (9) C15 ..... 5.625	PLATES, Carbon Steel
Fairfield, Ala. T2 ..... 6.15	Buffalo (9) R2 ..... 5.625	PLATES, Carbon Steel
Houston S5 ..... 6.40	Clairemont, Del. C22 ..... 5.625	PLATES, Carbon Steel
IndianaHarbor, Ind. Y1 ..... 6.15	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Johnstown, Pa. B2 ..... 6.15	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Joliet, Ill. A7 ..... 6.15	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
KansasCity, Mo. S5 ..... 6.40	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Kokomo, Ind. C16 ..... 6.25	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
LosAngeles B3 ..... 6.95	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel
Minnequa, Colo. C10 ..... 6.40	Clairton, Pa. U5 ..... 5.625	PLATES, Carbon Steel

### PLATES, Carbon Steel

AlabamaCity, Ala. R2 ..... 6.15	Ala.City, Ala. (9) R2 ..... 5.425	PLATES, Carbon Steel
AlabamaCity, Ala. R2 ..... 6.15	Aliquippa, Pa. (9) J5 ..... 5.425	PLATES, Carbon Steel
Alton, Ill. L1 ..... 5.65	Alton, Ill. L1 ..... 5.625</	

**BARS, Reinforcing  
(To Fabricators)**

AlabamaCity, Ala.	R2	.5.425
Atlanta A1		.5.425
Birmingham C15		.5.425
Buffalo R2		.5.425
Cleveland R2		.5.425
JerseyShore Pa.(3)	J8	.5.30
Marion, O.(3)	P11	.5.325
Tonawanda(3)	B12	.5.325
Tonawanda(4)	B12	.6.00
Williamsport,Pa.(3)	S19	5.50

**RAIL STEEL BARS**

ChicagoHts.(3)	C2	I-2	5.325
ChicagoHts. (4)	C4	I-2	5.425
ChicagoHts.(4)	C2	.5.425	
Franklin, Pa.(3)	F5	.5.325	
Franklin, Pa.(4)	F5	.5.425	
JerseyShore Pa.(3)	J8	.5.30	
Marion, O.(3)	P11	.5.325	
Tonawanda(3)	B12	.5.325	
Tonawanda(4)	B12	.6.00	
Williamsport,Pa.(3)	S19	5.50	

**RAIL STEEL BARS**

ChicagoHts.(3)	C2	I-2	5.325
ChicagoHts. (4)	C4	I-2	5.425
ChicagoHts.(4)	C2	.5.425	
Franklin, Pa.(3)	F5	.5.325	
Franklin, Pa.(4)	F5	.5.425	
JerseyShore Pa.(3)	J8	.5.30	
Marion, O.(3)	P11	.5.325	
Tonawanda(3)	B12	.5.325	
Tonawanda(4)	B12	.6.00	
Williamsport,Pa.(3)	S19	5.50	

**RAIL STEEL BARS**

Cleveland J5	R2	.7.275	Cleveland J5	R2	.8.975
Conshohocken,Pa.	A3	.7.325	Ecorse, Mich.	G5	.8.975
Fairfield,Ala.	T2	.7.275	Fairless,Pa.	U5	.9.025
Fairfield,Ala.	T2	.7.275	Fontana,Calif.	K1	.10.275
Fairless,Pa.	U5	.7.325	Gary,Ind.	U5	.8.975
Fontana,Calif.	K1	.8.025	IndianaHarbor,Ind.	Y1	.8.975
Ind.Harbor,Ind.	I-2	.7.275	Irvin,Pa.	U5	.8.975
Irvin,Pa.	U5	.7.275	Lackawanna(37)	B2	.8.975
Lackawanna(35)	B2	.7.275	SparrowsPoint(38)	B2	.8.975
Munhall,Pa.	U5	.7.275	Weirton,W.Va.	W6	.8.975
Pittsburgh J5		.7.275	Youngstown Y1		.8.975
S.Chicago,Ill.	W14	7.275			
Sharon,Pa.	S3	.7.275			
SparrowsPoint(36)	B2	7.275			
Warren,O. R2		.7.275			
Weirton,W.Va.	W6	.7.275			
Youngstown U5	Y1	.7.275			

**RAIL STEEL BARS**

Sharon,Pa.	S3	.7.275
SparrowsPoint(36)	B2	7.275
Warren,O. R2		.7.275
Weirton,W.Va.	W6	.7.275
Youngstown U5	Y1	.7.275

**RAIL STEEL BARS**

**SHEETS, Hot-Rolled Steel  
(18 Gage and Heavier)**

AlabamaCity, Ala.	R2	.4.925
Allenport,Pa.	P7	.4.925
Ashland,Ky.(8)	A10	.4.925
Cleveland J5	R2	.4.925
Detroit(8) M1		.4.925
Fairfield,Ala.	T2	.4.925
Fairless,Pa.	U5	.4.975
Fontana,Calif.	K1	.5.610
Ind.Harbor,Ind.	I-2	.4.925
Irvin,Pa.	U5	.4.925
Lackawanna,N.Y.	B2	.4.925
Marion,O.	P11	.4.925
Milwaukee,Wis.	W14	.4.925
Newport,Ky.	A2	.4.925
Niles,O.	M21	.4.925
Portsmouth,Ohio	P12	.4.925
Riverville,Ill.	A1	.4.925
Sharon,Pa.	S3	.4.925
Youngstown U5	Y1	.4.925

**SHEETS, Hot-Rolled Ingot Iron  
(18 Gage and Heavier)**

AlabamaCity, Ala.	R2	.4.925
Allenport,Pa.	P7	.4.925
Ashland,Ky.(8)	A10	.4.925
Cleveland J5	R2	.4.925
Detroit(8) M1		.4.925
Fairfield,Ala.	T2	.4.925
Fairless,Pa.	U5	.4.975
Fontana,Calif.	K1	.5.610
Ind.Harbor,Ind.	I-2	.4.925
Irvin,Pa.	U5	.4.925
Lackawanna,N.Y.	B2	.4.925
Marion,O.	P11	.4.925
Milwaukee,Wis.	W14	.4.925
Newport,Ky.	A2	.4.925
Niles,O.	M21	.4.925
Portsmouth,Ohio	P12	.4.925
Riverville,Ill.	A1	.4.925
Sharon,Pa.	S3	.4.925
Youngstown U5	Y1	.4.925

**SHEETS, Cold-Rolled Ingot Iron  
(18 Gage and Heavier)**

AlabamaCity, Ala.	R2	.6.05
Allenport,Pa.	P7	.6.05
Steubenville,O.	W10	.4.925
Warren,O. R2		.4.925
Youngstown U5	Y1	.4.925

**SHEETS, Cold-Rolled Steel  
(Commercial Quality)**

AlabamaCity, Ala.	R2	.6.05
Allenport,Pa.	P7	.6.05
Steubenville,O.	W10	.4.925
Warren,O. R2		.4.925
Youngstown U5	Y1	.4.925

**SHEETS, Culvert—Pure Iron**

Ind.Harbor,Ind.	I-2	.7.20
Irvin,Pa.	U5	.6.05
Lackawanna,N.Y.	B2	.4.925
Mansfield,O.	E6	.4.925
Munhall,Pa.	U5	.4.925
Newport,Ky.	A2	.4.925
Niles,O.	M21	.4.925
Pittsburgh,Calf.	C11	.5.625
Pittsburgh J5		.4.925
Portsmouth,Ohio	P12	.4.925
Riverville,Ill.	A1	.4.925
Sharon,Pa.	S3	.4.925
Youngstown U5	Y1	.4.925

**SHEETS, Galvanized Steel  
Hot-Dipped**

AlabamaCity, Ala.	R2	.6.60†
Fairless,Pa.	U5	.6.10
Ind.Harbor,Ind.	I-2	.6.60†
Irvin,Pa.	U5	.6.60†
Lackawanna,N.Y.	B2	.6.05
Mansfield,O.	E6	.6.05
Munhall,Pa.	U5	.6.05
Newport,Ky.	A2	.6.05
Pittsburgh,Calf.	C11	.7.35*
Pittsburgh J5		.6.05
Portsmouth,Ohio	P12	.6.05
Sharon,Pa.	S3	.6.05
Youngstown U5	Y1	.6.05

**SHEETS, Culvert—Pure Iron**

Ind.Harbor,Ind.	I-2	.7.20
Irvin,Pa.	U5	.6.05
Lackawanna,N.Y.	B2	.6.05
Mansfield,O.	E6	.6.05
Munhall,Pa.	U5	.6.05
Newport,Ky.	A2	.6.05
Pittsburgh,Calf.	C11	.7.35*
Pittsburgh J5		.6.05
Portsmouth,Ohio	P12	.6.05
Sharon,Pa.	S3	.6.05
Youngstown U5	Y1	.6.05

**SHEETS, Galvanized Ingot Iron  
(Hot-Dipped Continuous)**

Ashland,Ky.	A10	.6.85
Middletown,O.	A10	.6.85
Youngstown J5		.7.275
Weirton,W.Va.	W6	.7.275
Youngstown Y1		.8.975

**SHEETS, Galvanized Steel**

Butler,Pa.	A10	(type 1) 9.25
Butler,Pa.	A10	(type 2) 9.35
Canton,O.	R2	7.00
Irvin,Pa.	U5	7.00
Youngstown J5		.7.275

**SHEETS, Galvanized Ingot Iron  
(Hot-Dipped Continuous)**

Ashland,Ky.	A10	.6.85
Middletown,O.	A10	.6.85
Youngstown J5		.7.275
Weirton,W.Va.	W6	.7.275
Youngstown Y1		.8.975

**SHEETS, Galvanized Steel**

Butler,Pa.	A10	9.25
Canton,O.	R2	7.00
Irvin,Pa.	U5	7.00
Youngstown J5		.7.275
Weirton,W.Va.	W6	.7.275

**SHEETS, Galvanized Steel**

Butler,Pa.	A10	9.25
Canton,O.	R2	7.00
Irvin,Pa.	U5	7.00
Youngstown J5		.7.275
Weirton,W.Va.	W6	.7.275

**SHEETS, Galvanized Steel**

Butler,Pa.	A10	9.25
Canton,O.	R2	7.00
Irvin,Pa.	U5	7.00
Youngstown J5		.7.275
Weirton,W.Va.	W6	.7.275

**SHEETS, Galvanized Steel**

Butler,Pa.	A10	9.25
Canton,O.	R2	7.00
Irvin,Pa.	U5	7.00
Youngstown J5		.7.275
Weirton,W.Va.	W6	.7.275

**SHEETS, Galvanized Steel**

Butler,Pa.	A10	9.25
Canton,O.	R2	7.00
Irvin,Pa.	U5	7.00
Youngstown J5		.7.275
Weirton,W.Va.	W6	.7.275

**SHEETS, Galvanized Steel**

Butler,Pa.	A10	9.25

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## STRIP

### STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2	4.925
Allenport, Pa. P7	4.925
Alton, Ill. L1	5.125
Ashland, Ky. (8) A10	4.925
Atlanta All	4.925
Bessemer, Ala. T2	4.925
Birmingham C15	4.925
Buffalo (27) R2	4.925
Conshohocken, Pa. A3	4.975
Detroit M1	5.025
Ecorse, Mich. G5	4.925
Fairfield, Ala. T2	4.925
Fontana, Calif. K1	5.675
Gary, Ind. U5	4.925
Ind. Harbor, Ind. I-2, Y1	4.925
Johnstown, Pa. (25) B2	4.925
Lackawanna, N.Y. (25) B2	4.925
Los Angeles (25) B3	5.675
Minnequa, Colo. C10	6.025
Riverdale, Ill. A1	4.925
San Francisco S7	6.35
Seattle (25) B3	5.925
Seattle N14	6.35
Sharon, Pa. S3	4.925
S. Chicago W14	4.925
S. San Francisco (25) B3	5.675
Sparrows Point, Md. B2	4.925
Sterling, Ill. (1) N15	4.925
Sterling, Ill. N15	5.025
Torrance, Calif. C11	5.675
Warren, O. R2	4.925
Weirton, W. Va. W6	4.925
Youngstown U5	4.925

### STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18	8.10
Farrell, Pa. S3	8.10
Gary, Ind. U5	8.10
Houston S5	8.35
Ind. Harbor, Ind. Y1	8.10
Kansas City, Mo. S5	8.35
Los Angeles B3	9.30
Lowellville, O. S3	8.10
Newport, Ky. A2	8.10
Sharon, Pa. A2, S3	8.10
S. Chicago, Ill. W14	8.10
Youngstown U5, Y1	8.10

### STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer, Ala. T2	7.325
Conshohocken, Pa. A3	7.325
Ecorse, Mich. G5	7.325
Fairfield, Ala. T2	7.325
Farrell, Pa. S3	7.325
Gary, Ind. U5	7.325
Ind. Harbor, Ind. I-2, Y1	7.325
Lackawanna, N.Y. B2	7.325
Los Angeles (25) B3	8.075
Seattle (25) B3	8.325
Sharon, Pa. S3	7.325
S. Chicago, Ill. W14	7.325
S. San Francisco (25) B3	8.075
Sparrows Point, Md. B2	7.325
Warren, O. R2	7.325
Weirton, W. Va. W6	7.325
Youngstown U5, Y1	7.325

### STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10	5.175
Warren, O. R2	5.675

### STRIP, Cold-Rolled Carbon

Anderson, Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Dearborn, Mich. D3	7.15
Detroit D2, M1, P20	7.15
Dover, O. G6	7.15
Ecorse, Mich. G5	7.15
Evanston, Ill. M22	7.25
Follansbee, W. Va. F4	7.15
Fontana, Calif. K1	9.00
Franklin Park, Ill. T6	7.25
Ind. Harbor, Ind. Y1	7.15
Indianapolis J5	7.30
Los Angeles C1	9.05
New Bedford, Mass. R10	7.60
New Britain, Conn. S15	7.60
New Castle, Pa. B4, E5	7.15
New Haven, Conn. D2	7.60
New Kensington, Pa. A6	7.15
Pawtucket, R.I. R3	7.80
Pawtucket, R.I. N8	7.70
Philadelphia P24	7.70
Pittsburgh J5	7.15
Riverdale, Ill. A1	7.25
Rome, N.Y. (32) R6	7.15
Sharon, Pa. S3	7.15
Trenton, N.J. R5	8.60
Wallingford, Conn. W2	7.60
Warren, O. R2	7.60
Weirton, W. Va. W6	7.15
Youngstown U5, Y1	7.325

### SILICON STEEL

H.R. SHEETS(22 Ga., cut lengths)	Arma- Field ture	Elec- tric Motor	Dyna- mo
BeechBottom, W. Va. W10	11.80	12.90	13.95

Mansfield, O. E6	9.625	11.10	11.80	12.90	13.95
Newport, Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles, O. M21, S3	9.625	11.10	11.80	12.90	13.95
Vandergrift, Pa. U5	11.10	11.80	12.90	13.95	
Yankee, O. A10	9.625	11.10	11.80	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.)	Up to	0.81-	1.06-
(Fully Processed)	0.80C	1.05C	1.35C
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.65
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Riverville, Ill. A1	9.05	10.40	12.60
Rome, N.Y. (32) R6	8.95	10.40	12.60
Sharon, Pa. S3	8.95	10.40	12.60
Trenton, N.J. R5	10.70	12.90	16.10
Wallingford, Conn. W2	9.40	10.70	12.90
Warren, O. T5	8.95	10.40	12.60
Worcester, Mass. A7, T6	9.50	10.70	12.90
Youngstown J5	8.95	10.40	12.60

Up to	0.81-	1.06-	
0.80C	1.05C	1.35C	
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.65
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Riverville, Ill. A1	9.05	10.40	12.60
Rome, N.Y. (32) R6	8.95	10.40	12.60
Sharon, Pa. S3	8.95	10.40	12.60
Trenton, N.J. R5	10.70	12.90	16.10
Wallingford, Conn. W2	9.40	10.70	12.90
Warren, O. T5	8.95	10.40	12.60
Worcester, Mass. A7, T6	9.50	10.70	12.90
Youngstown J5	8.95	10.40	12.60

Up to	0.81-	1.06-	
0.80C	1.05C	1.35C	
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.65
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Riverville, Ill. A1	9.05	10.40	12.60
Rome, N.Y. (32) R6	8.95	10.40	12.60
Sharon, Pa. S3	8.95	10.40	12.60
Trenton, N.J. R5	10.70	12.90	16.10
Wallingford, Conn. W2	9.40	10.70	12.90
Warren, O. T5	8.95	10.40	12.60
Worcester, Mass. A7, T6	9.50	10.70	12.90
Youngstown J5	8.95	10.40	12.60

Up to	0.81-	1.06-	
0.80C	1.05C	1.35C	
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.65
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Riverville, Ill. A1	9.05	10.40	12.60
Rome, N.Y. (32) R6	8.95	10.40	12.60
Sharon, Pa. S3	8.95	10.40	12.60
Trenton, N.J. R5	10.70	12.90	16.10
Wallingford, Conn. W2	9.40	10.70	12.90
Warren, O. T5	8.95	10.40	12.60
Worcester, Mass. A7, T6	9.50	10.70	12.90
Youngstown J5	8.95	10.40	12.60

Up to	0.81-	1.06-	
0.80C	1.05C	1.35C	
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.65
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Riverville, Ill. A1	9.05	10.40	12.60
Rome, N.Y. (32) R6	8.95	10.40	12.60
Sharon, Pa. S3	8.95	10.40	12.60
Trenton, N.J. R5	10.70	12.90	16.10
Wallingford, Conn. W2	9.40	10.70	12.90
Warren, O. T5	8.95	10.40	12.60
Worcester, Mass. A7, T6	9.50	10.70	12.90
Youngstown J5	8.95	10.40	12.60

Up to	0.81-	1.06-	
0.80C	1.05C	1.35C	
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.65
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Riverville, Ill. A1	9.05	10.40	12.60
Rome, N.Y. (32) R6	8.95	10.40	12.60
Sharon, Pa. S3	8.95	10.40	12.60
Trenton, N.J. R5	10.70	12.90	16.10
Wallingford, Conn. W2	9.40	10.70	12.90
Warren, O. T5	8.95	10.40	12.60
Worcester, Mass. A7, T6	9.50	10.70	12.90
Youngstown J5	8.95	10.40	12.60

Up to	0.81-	1.06-	
0.80C	1.05C	1.35C	
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.65
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Riverville, Ill. A1	9.05	10.40	12.60
Rome, N.Y. (32) R6	8.95	10.40	12.60
Sharon, Pa. S3	8.95	10.40	12.60
Trenton, N.J. R5	10.70	12.90	16.10
Wallingford, Conn. W2	9.40	10.70	12.90
Warren, O. T5	8.95	10.40	12.60
Worcester, Mass. A7, T6	9.50	10.70	12.90
Youngstown J5	8.95	10.40	12.60

Up to	0.81-	1.06-
0.80C</td		

WIRE, Tire Bead	Fairfield, Ala. T2	.10.60	Craw'ldville, M8	.17.25	19.05
Bartonville, Ill. K4	Houston S5	.10.85	Fostoria, O. S1	.17.65	19.05
Monessen, Pa. P16	Jacksonville, Fla. M8	.10.70	Houston S5	.17.40	18.95**
Roebling, N.J. R5	Johnstown, Pa. B2	.10.60	Jacksonville M8	.17.25	19.05
WIRE, Cold-Rolled Flat	Joliet, Ill. A7	.10.60	Johnstown B2	.17.15	18.95\$
Anderson, Ind. G6	Kansas City, Mo. S5	.10.85	Kan. City, Mo. S5	.17.40	19.05
Baltimore T6	Kokomo, Ind. C16	.10.70	Kokomo C16	.17.25	18.90†
Boston T6	Los Angeles B3	.11.40	Minnequa C10	.17.40	18.95**
Buffalo W12	Minnequa, Colo. C10	.10.85	P'l'm'r, Mass. W2	.17.45	19.00†
Chicago W13	Pittsburg, Calif. C11	.11.40	Pitts., Calif. C11	.17.15	19.05†
Cleveland A7	S. Chicago, Ill. R2	.10.60	Sparrows Pt. B2	.17.25	19.05\$
Crawfordsville, Ind.	S. San Francisco C10	.11.40	Sterling (37) N15	.17.25	19.05†
Dover, O. G6	Sparrows Pt. Md. B2	.10.70	Waukegan A7	.17.15	18.70†
Franklin Park, Ill. T6	Sterling, Ill. (37) N15	.10.70	Worcester A7	.17.45	...
G	Coil No. 6500 Interim				
Kokomo, Ind. C16	Alabama City, Ala. R2	\$10.65	WIRE, Merchant Quality		
Massillon, O. R8	Atlanta A11	.10.75	(16 to 8 gage) An'd'd Galv.		
Milwaukee C23	Bartonville, Ill. K4	.10.75	Ala. City, Ala. R2	8.65	9.20**
Monessen, Pa. P7, P16	Buffalo W12	.10.65	Aliquippa J5	.8.65	9.325\$
Palmer, Mass. W12	Chicago W13	.10.65	Atlanta (48) A11	8.75	9.425\$
Pawtucket, R.I. N8	Crawfordsville, Ind. M8	.10.75	Bartonville (48) K4	8.75	9.425\$
Philadelphia P24	Donora, Pa. A7	.10.65	Buffalo W12	.8.65	9.20†
Riverville, Ill. A1	Duluth A7	.10.65	Cleveland A7	.8.65	9.20†
Rome, N.Y. R6	Fairfield, Ala. T2	.10.65	Crawfordsville, M8	8.75	9.425
Sharon, Pa. S3	Houston S5	.10.90	Donora, Pa. A7	.8.65	9.20†
Trenton, N.J. R5	Jacksonville, Fla. M8	.10.75	Duluth A7	.8.65	9.20†
Warren, O. B9	Joliet, Ill. A7	.10.65	Fairfield T2	.8.65	9.20†
Worcester, Mass. A7, T6	Kansas City, Mo. S5	.10.90	Houston (48) S5	8.90	9.45**
NAILS, Stock	Kokomo, Ind. C16	.10.75	Jacksonville, Fla. M8	8.75	9.425
Colo.	Los Angeles B3	.11.45	Joliet, Ill. A7	.8.65	9.20†
Alabama City, Ala. R2	Aliquippa, Pa. J5	.10.73	Kans. City (48) S5	8.90	9.45**
Atlanta A11	Atlanta A11	.10.75	Kokomo C16	.8.75	9.30†
Bartonville, Ill. K4	Bartonville, Ill. K4	.10.75	Los Angeles B3	9.60	10.275\$
Chicago W13	S. Chicago, Ill. R2	.10.65	Minnequa C10	.8.90	9.45**
Cleveland A9	S. San Francisco C10	.11.45	Monessen P7(48)	8.65	9.325\$
Crawfordsville, Ind. M8	Sparrows Pt. Md. B2	.10.75	Palmer, Mass. W12	8.95	9.50†
Donora, Pa. A7	Sterling, Ill. (37) N15	.10.75	Pitts. Calif. C11	.9.60	10.15†
Duluth A7	BALE TIES, Single Loop	Col.	Rankin, Pa. A7	.8.65	9.20†
Fairfield, Ala. T2	Alabama City, Ala. R2	.212	S. Chicago R2	.8.65	9.20†
Houston S5	Atlanta A11	.214	S. San Fran. C10	.9.60	10.15**
Jacksonville, Fla. M8	Bartonville, Ill. K4	.214	Sparrows Pt. B2(48)	8.75	9.425\$
Johnstown, Pa. B2	Crawfordsville, Ind. M8	.214	Sterling (48) N15	8.90	9.575†
Joliet, Ill. A7	Donora, Pa. A7	.212	Sterling (1) (48) 8.80	9.475†	
Kansas City, Mo. S5	Marion, O. P11	.212	Struthers, O. Y1	.8.65	9.30†
Kokomo, Ind. C16	Minnequa, Colo. C10	.217	Worcester, Mass. A7	8.95	9.50†
Monessen, Pa. P7	Houston S5	.217			
Pittsburgh, Calif. C11	Jacksonville, Fla. M8	.214			
Rankin, Pa. A7	Joliet, Ill. A7	.212			
S. Chicago, Ill. R2	Kansas City, Mo. S5	.217			
Sparrows Pt. Md. B2	Kokomo, Ind. C16	.214			
Sterling, Ill. (7) N15	Minnequa, Colo. C10	.217			
Worcester, Mass. A7	Houston S5	.217			
(To Wholesalers; per cwt)					
Galveston, Tex. D7		\$9.10			
NAILS, Cut (100 lb keg)					
To Dealers (33)					
Conshohocken, Pa. A3		\$9.80			
Wheeling, W. Va. W10		.9.80			
POLISHED STAPLES					
Col.					
Alabama City, Ala. R2		.175			
Alliquippa, Pa. J5		.175			
Atlanta A11		.177			
Bartonville, Ill. K4		.177			
Crawfordsville, Ind. M8		.177			
Donora, Pa. A7		.175			
Duluth A7		.175			
Fairfield, Ala. T2		.175			
Houston S5		.175			
Jacksonville, Fla. M8		.177			
Johnstown, Pa. B2		.175			
Joliet, Ill. A7		.175			
Kansas City, Mo. S5		.178			
Kokomo, Ind. C16		.175			
Monessen, Pa. P7		.173			
Pittsburgh, Calif. C11		.192			
Rankin, Pa. A7		.173			
S. Chicago, Ill. R2		.173			
Sparrows Pt. Md. B2		.175			
Sterling, Ill. (7) N15		.175			
Worcester, Mass. A7		.179			
TIE WIRE, Automatic Baler (14 1/2 Ga.) (per 97 lb Net Box)					
Coil No. 3150					
Alabama City, Ala. R2		\$10.26			
Atlanta A11		.10.36			
Bartonville, Ill. K4		.10.36			
Buffalo W12		.10.26			
Chicago W13		.10.26			
Crawfordsville, Ind. M8		.10.36			
Donora, Pa. A7		.10.26			
Duluth A7		.10.26			
Fairfield, Ala. T2		.10.26			
Houston S5		.10.51			
Jacksonville, Fla. M8		.10.36			
Kansas City, Mo. S5		.10.51			
Kokomo, Ind. C16		.10.36			
Monessen, Pa. P7		.177			
Pittsburgh, Calif. C11		.194			
Rankin, Pa. A7		.175			
S. Chicago, Ill. R2		.175			
Sparrows Pt. Md. B2		.177			
Sterling, Ill. (7) N15		.175			
Worcester, Mass. A7		.181			
TIE WIRE, Automatic Baler (14 1/2 Ga.) (per 97 lb Net Box)					
Coil No. 3150					
Alabama City, Ala. R2		\$10.26			
Atlanta A11		.10.36			
Bartonville, Ill. K4		.10.36			
Buffalo W12		.10.26			
Chicago W13		.10.26			
Crawfordsville, Ind. M8		.10.36			
Donora, Pa. A7		.10.26			
Duluth A7		.10.26			
Fairfield, Ala. T2		.10.26			
Houston S5		.10.51			
Jacksonville, Fla. M8		.10.36			
Kansas City, Mo. S5		.10.51			
Kokomo, Ind. C16		.10.36			
Monessen, Pa. P7		.177			
Pittsburgh, Calif. C11		.194			
Rankin, Pa. A7		.175			
S. Chicago, Ill. R2		.175			
Sparrows Pt. Md. B2		.177			
Sterling, Ill. (7) N15		.175			
Worcester, Mass. A7		.181			
WIRE, Tire Bead	Fairfield, Ala. T2	.10.60			
Bartonville, Ill. K4	Houston S5	.10.85			
Monessen, Pa. P16	Jacksonville, Fla. M8	.10.70			
Roebling, N.J. R5	Johnstown, Pa. B2	.10.60			
WIRE, Cold-Rolled Flat	Joliet, Ill. A7	.10.60			
Anderson, Ind. G6	Kansas City, Mo. S5	.10.85			
Baltimore T6	Kokomo, Ind. C16	.10.70			
Boston T6	Los Angeles B3	.11.40			
Buffalo W12	Minnequa, Colo. C10	.10.85			
Chicago W13	Pittsburg, Calif. C11	.11.40			
Cleveland A7	S. Chicago, Ill. R2	.10.60			
Crawfordsville, Ind. M8	S. San Francisco C10	.11.40			
Dover, O. G6	Sparrows Pt. Md. B2	.10.70			
Franklin Park, Ill. T6	Sterling, Ill. (37) N15	.10.70			
G	Coil No. 6500 Interim				
Kokomo, Ind. C16					
Massillon, O. R8					
Milwaukee C23					
Monessen, Pa. P7, P16					
Palmer, Mass. W12					
Pawtucket, R.I. N8					
Philadelphia P24					
Riverville, Ill. A1					
Rome, N.Y. R6					
Sharon, Pa. S3					
Trenton, N.J. R5					
Warren, O. B9					
Worcester, Mass. A7, T6					
NAILS, Stock					
Colo.					
Alabama City, Ala. R2					
Atlanta A11					
Bartonville, Ill. K4					
Buffalo W12					
Chicago W13					
Cleveland A7					
Crawfordsville, Ind. M8					
Donora, Pa. A7					
Duluth A7					
Fairfield, Ala. T2					
Houston S5					
Jacksonville, Fla. M8					
Johnstown, Pa. B2					
Joliet, Ill. A7					
Kansas City, Mo. S5					
Kokomo, Ind. C16					
Monessen, Pa. P7					
Pittsburgh, Calif. C11					
Rankin, Pa. A7					
S. Chicago, Ill. R2					
Sparrows Pt. Md. B2					
Sterling, Ill. (7) N15					
Worcester, Mass. A7					
(To Wholesalers; per cwt)					
Galveston, Tex. D7		\$9.10			
NAILS, Cut (100 lb keg)					
To Dealers (33)					
Conshohocken, Pa. A3		\$9.80			
Wheeling, W. Va. W10		.9.80			
POLISHED STAPLES					
Col.					
Alabama City, Ala. R2		.175			
Alliquippa, Pa. J5		.175			
Atlanta A11		.177			
Bartonville, Ill. K4		.177			
Crawfordsville, Ind. M8		.177			
Donora, Pa. A7		.175			
Duluth A7		.175			
Fairfield, Ala. T2		.175			
Houston S5		.175			
Jacksonville, Fla. M8		.177			
Johnstown, Pa. B2		.175			
Joliet, Ill. A7		.175			
Kansas City, Mo. S5		.178			
Kokomo, Ind. C16		.175			
Monessen, Pa. P7		.173			
Pittsburgh, Calif. C11		.192			
Rankin, Pa. A7		.193			
S. Chicago, Ill. R2		.193			
Sparrows Pt. Md. B2		.177			
Sterling, Ill. (7) N15		.193†			
Worcester, Mass. A7		.181			
TIE WIRE, Automatic Baler (14 1/2 Ga.) (per 97 lb Net Box)					
Coil No. 3150					
Alabama City, Ala. R2		\$10.26			
Atlanta A11		.10.36			
Bartonville, Ill. K4		.10.70			
Buffalo W12		.10.60			
Chicago W13		.10.60			
Crawfordsville, Ind. M8		.10.70			
Donora, Pa. A7		.10.60			
Duluth A7		.10.60			
Fairfield, Ala. T2		.10.60			
Houston S5		.10.51			
Jacksonville, Fla. M8		.10.36			
Kansas City, Mo. S5		.10.51			
Kokomo, Ind. C16		.10.36			
Monessen, Pa. P7		.177			
Pittsburgh, Calif. C11		.194			
Rankin, Pa. A7		.175			
S. Chicago, Ill. R2		.175			
Sparrows Pt. Md. B2		.177			
Sterling, Ill. (7) N15		.175			
Worcester, Mass. A7		.181			
WIRE, Tire Bead	Fairfield, Ala. T2	.10.60			
Bartonville, Ill. K4	Houston S5	.10.85			
Monessen, Pa. P16	Jacksonville, Fla. M8	.10.70			
Roebling, N.J. R5	Johnstown, Pa. B2	.10.60			
WIRE, Cold-Rolled Flat	Joliet, Ill. A7	.10.60			
Anderson, Ind. G6	Kansas City, Mo. S5	.10.85			
Baltimore T6	Kokomo, Ind. C16	.10.70			
Boston T6	Los Angeles B3	.11.40			
Buffalo W12	Minnequa, Colo. C10	.10.85			
Chicago W13	Pittsburg, Calif. C11	.11.40			
Cleveland A7	S. Chicago, Ill. R2	.10.60			
Crawfordsville, Ind. M8	S. San Francisco C10	.11.40			
Dover, O. G6	Sparrows Pt. Md. B2	.10.70			
Franklin Park, Ill. T6	Sterling, Ill. (37) N15	.10.70			
G	Coil No. 6500 Interim				
Kokomo, Ind. C16					
Massillon, O. R8					
Milwaukee C23					
Monessen, Pa. P7, P16					
Palmer, Mass. W12					
Pawtucket, R.I. N8					
Philadelphia P24					
Riverville, Ill. A1					
Rome, N.Y. R6					
Sharon, Pa. S3					
Trenton, N.J. R5					
Warren, O. B9					
Worcester, Mass. A7, T6					
NAILS, Cut (100 lb keg)					
Colo.					
Alabama City, Ala. R2					
Atlanta A11					
Bartonville, Ill. K4					
Buffalo W12					
Chicago W13					
Cleveland A7					
Crawfordsville, Ind. M8					
Donora, Pa. A7					
Duluth A7					
Fairfield, Ala. T2					
Houston S5					

Johnstown, P

(1) Chicago base.  
 (2) Angles, flats, bands.  
 (3) Merchant.  
 (4) Reinforcing.  
 (5)  $1\frac{1}{2}$  to under  $1\frac{7}{16}$  in.;  
 $\frac{1}{16}$  to under  $1\frac{15}{16}$  in.,  
 6.70c; 1  $\frac{15}{16}$  to 8 in.,  
 inclusive, 7.05c.

(6) Chicago or Birn. Base.  
 (7) Chicago base 2 cols. lower.  
 (8) 16 Ga. and heavier.  
 (9) Merchant quality; add 0.35c  
 for special quality.  
 (10) Pittsburgh base.  
 (11) Cleveland & Pitts. base.  
 (12) Worcester, Mass. base.  
 (13) Add 0.20c for 17 Ga. &  
 heavier.  
 (14) Gage 0.143 to 0.249 in.;  
 for gage 0.142 and lighter,  
 5.80c.  
 (15)  $\frac{3}{4}$ " and thinner.  
 (16) 40 lb and under.  
 (17) Flats only; 0.25 in. &  
 heavier.  
 (18) To dealers.  
 (19) Chicago & Pitts. base.  
 (21) New Haven, Conn. base.  
 (22) Deld. San Francisco Bay  
 area.  
 (23) Special quality.  
 (24) Deduct 0.15c, finer than  
 15 Ga.

(25) Bar mill bands.  
 (27) Bar mill sizes.  
 (28) Bonderized.  
 (29) Youngstown base.  
 (30) Sheared; for universal mill  
 add 0.45c.  
 (31) Widths over  $\frac{3}{4}$  in.; 7.80c,  
 for widths  $\frac{3}{4}$  in. and under  
 by 0.125 in., and thinner.

(32) Buffalo base.  
 (33) To jobbers; deduct 20c.  
 (34) 9.60c for cut lengths.  
 (35) 72" and narrower.  
 (36) 54" and narrower.  
 (37) Chicago base, 10 points  
 lower.  
 (38) 14 Ga. & lighter; 48" &  
 narrower.  
 (39) 48" and narrower.  
 (40) Lighter than 0.035";  
 $0.035"$  and heavier, 0.25c  
 higher.  
 (41) 9.10c for cut lengths.  
 (42) Mill lengths, f.o.b. mill;  
 del'd. in mill zone or within  
 switching limits, 5.685c.  
 (43) 9-14½ Ga.  
 (44) To fabricators.  
 (48) 6-7 Ga.  
 (49) 3½ in. and smaller rounds;  
 9.30c, over 3½ in. and other  
 shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled								Carload discounts from list, %			
Size—Inches	2	2½	3	3½	4	5	6				
List Per Ft	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92				
Pounds Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18				
Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*				
Aliquippa, Pa. J5	+9.25 +24.25	+2.75 +19.5	+0.25 +17	1.25 +15.5	1.25 +15.5	1 +15.75	3.5 +13.25				
Ambridge, Pa. N2	+9.25 ...	+2.75 ...	+0.25 ...	1.25 ...	1.25 ...	1 ...	3.5 ...				
Lorain, O. N3	+9.25 +24.25	+2.75 +19.5	+0.25 +17	1.25 +15.5	1.25 +15.5	1 +15.75	3.5 +13.25				
Youngstown Y1	+9.25 +24.25	+2.75 +19.5	+0.25 +17	1.25 +15.5	1.25 +15.5	1 +15.75	3.5 +13.25				

ELECTRIC STANDARD PIPE, Threaded and Coupled				Carload discounts from list, %			
Youngstown R2	+9.25 +24.25	+2.75 +19.5	+0.25 +17	1.25 +15.5	1.25 +15.5	1 +15.75	3.5 +13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled								Carload discounts from list, %			
Size—Inches	1/8	1/4	3/8	1/2	5/8	11/16	13/16	1	1 1/4	2 3/8	2 2/8
List Per Ft	5.5c	6c	6c	8.5c	11.5c	17c	17c				
Pounds Per Ft	0.24	0.42	0.57	0.85	1.13	1.68	1.68				
Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*				
Aliquippa, Pa. J5	...	...	...	5.25 +10	8.25 +6	11.75 +1.5	14.25 +0.75				
Alton, Ill. L1	...	...	...	3.25 +12	6.25 +8	9.75 +3.5	12.25 +2.75				
Benwood, W. Va. W10	4.5 +22	+7.5 +31	+18 +39.5	5.25 +10	8.25 +6	11.75 +1.5	14.25 +0.75				
Butler, Pa. F6	5.5 +21	+6.5 +30	+17 +38.5	...	...	...	...				
Etna, Pa. N2	...	...	...	5.25 +10	8.25 +6	11.75 +1.5	14.25 +0.75				
Fairless, Pa. N3	...	...	...	3.25 +12	6.25 +8	9.75 +3.5	12.25 +2.75				
Fontana, Calif. K1	...	...	...	+8.25 +23.5	+5.25 +19.5	+1.75 +15	0.75 +14.25				
Indiana Harbor, Ind. Y1	...	...	...	4.25 +11	7.25 +7	10.75 +2.5	13.25 +3.25				
Lorain, O. N3	...	...	...	5.25 +10	8.25 +6	11.75 +1.5	14.25 +0.75				
Sharon, Pa. S4	5.5 +21	+6.5 +30	+17 +38.5	...	...	...	...				
Sharon, Pa. M6	...	...	...	5.25 +10	8.25 +6	11.75 +1.5	14.25 +0.75				
Sparrows Pt., Md. B2	3.5 +23	+8.5 +32	+19 +40.5	3.25 +12	6.25 +8	9.75 +3.5	12.25 +2.75				
Wheatland, Pa. W9	5.5 +21	+6 +30	+17 +38.5	5.25 +10	8.25 +6	11.75 +1.5	14.25 +0.75				
Youngstown R2, Y1	...	...	...	5.25 +10	8.25 +6	11.75 +1.5	14.25 +0.75				

Size—Inches	1 1/2	2	2 1/2	3	3 1/2	4
List Per Ft	27.5c	37c	58.5c	76.5c	92c	\$1.09
Pounds Per Ft	2.73	3.68	5.82	7.62	9.20	10.89
Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*
Aliquippa, Pa. J5	14.75 0.25	15.25 0.75	16.75 0.5	16.75 0.5	...	...
Alton, Ill. L1	12.75 +1.75	13.25 +1.25	14.75 +1.5	14.75 +1.5	...	...
Benwood, W. Va. W10	14.75 0.25	15.25 0.75	16.75 0.5	16.75 0.5	6.25 +10.5	6.25 +10.5
Etna, Pa. N2	14.75 0.25	15.25 0.75	16.75 0.5	16.75 0.5	6.25 +10.5	6.25 +10.5
Fairless, Pa. N3	12.75 +1.75	13.25 +1.25	14.75 +1.5	14.75 +1.5	4.25 +12.5	4.25 +12.5
Fontana, Calif. K1	1.25 +13.25	1.75 +12.75	3.25 +13	3.25 +13	+7.25 +24	+7.25 +24
Indiana Harbor, Ind. Y1	13.75 +0.75	14.25 +0.25	15.75 +0.5	15.25 +0.5	5.25 +11.5	5.25 +11.5
Lorain, O. N3	14.75 0.25	15.25 0.75	16.75 0.5	16.75 0.5	...	...
Sharon, Pa. M6	14.75 0.25	15.25 0.75	16.75 0.5	16.75 0.5	...	...
Sparrows Pt., Md. B2	12.75 +1.75	13.25 +1.25	14.75 +1.5	14.75 +1.5	4.25 +12.5	4.25 +12.5
Wheatland, Pa. W9	14.75 0.25	15.25 0.75	16.75 0.5	16.75 0.5	6.25 +10.5	6.25 +10.5
Youngstown R2, Y1	14.75 0.25	15.25 0.75	16.75 0.5	16.75 0.5	6.25 +10.5	6.25 +10.5

\*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

## Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling—	Forging Ingots	H.R. Billets	H.R. Strip	C.F. Wire	H.R. Rods; C.F. Shapes	Bars; Structural Wire	Plates	Sheets	Wire	C.R. Strip; Flat
201	22.00	27.00	...	36.00	40.00	42.00	44.25	48.50	45.00		
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25		
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50		
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00		
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00		
303	...	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75		
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00		
304L	...	48.25	51.50	53.00	55.50	58.50	63.25	62.75	62.75		
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75		
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00		
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50		
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75		
314	...	77.50	...	86.50	91.00	92.75	99.00	104.25	104.25		
316	39.75	49.50	62.25	69.25	73.00	76.75	80.75	80.75	80.75		
316L	...	55.50	70.00	76.50	77.00	80.75	84.50	88.25	88.50		
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00		
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50		
330	...	106.75	...	95.25	106.75	105.50	108.00	149.25	149.25		
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25		
403	...	28.25	...	32.00	33.75	35.00	40.25	40.25	40.25		
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75		
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25		
416	...	28.75	...	32.50	34.25	36.00	48.25	48.25	48.25		
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00		
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75		
430F	...	29.50	...	33.00	34.75	36.75	51.75	42.00	42.00		
431	28.75	37.75	...	42.00	44.25	46.00	56.00	56.00	56.00		
446	...	39.25	59.00	44.25	46.50	47.75	70.00	70.00	70.00		

Grade	\$ per lb	Grade	\$ per lb			
Regular Carbon	0.305	Cr-Hot Work	0.475			
Extra Carbon	0.360	W-Cr Hot Work	0.500			
Special Carbon	0.475	V-Cr Hot Work	0.520			
Oil Hardening	0.475	Hi-Carbon-Cr	0.925			
W	Cr	V	Co			
Grade by Analysis (%)	W	Cr	V	Co	Mo	\$ per lb
20.25	4.25	1.6	12.25	...	...	4.285
18.25	4.25	1	4.75	...	...	2.500
18	4	2	9	...	...	2.370
18	4	2	...	...	...	1.960
18	4	1	...	...	...	1.795
9	3.5	...	...	...	...	1.395
13.5	4	3	...	...	...	2.060
13.75	3.75	2	5	...	...	2.440
6.4	4.5	1.9	...	5	...	1.300
6	4	3	...	6	...	1.545
1.5	4	1	...	8.5	...	1.155
Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.						

# Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle- able	Besse- mer		Basic	No. 2 Foundry	Malle- able	Besse- mer
<i>Birmingham District</i>					Duluth, I-3 .....	66.00	66.50	66.50	67.00
Birmingham R2 .....	62.00	62.50†	....	....	Erie, Pa., I-3 .....	66.00	66.50	66.50	67.00
Birmingham U6 .....	....	62.50†	66.50	....	Everett, Mass., E1 .....	67.50	68.00	68.50	....
Woodward, Ala., W15 .....	62.00**	62.50†	66.50	....	Fontana, Calif., K1 .....	75.00	75.50	....	....
Cincinnati, deld. ....	....	70.20	....	....	Geneva, Utah, C11 .....	66.00	66.50	....	....
<i>Buffalo District</i>					GraniteCity, Ill., G4 .....	67.90	68.40	68.90	....
Buffalo H1, R2 .....	66.00	66.50	67.00	67.50	Ironton, Utah, C11 .....	66.00	66.50	....	....
N. Tonawanda, N.Y., T9 .....	....	66.50	67.00	67.50	Minnequa, Colo., C10 .....	68.00	68.50	69.00	....
Tonawanda, N.Y., W12 .....	66.00	66.50	67.00	67.50	Rockwood, Tenn., T3 .....	....	62.50†	66.50	....
Boston, deld. ....	77.29	77.79	78.29	....	Toledo, Ohio, I-3 .....	66.00	66.50	66.50	67.00
Rochester, N.Y., deld. ....	69.02	69.52	70.02	....	Cincinnati, deld. ....	72.94	73.44	....	....
Syracuse, N.Y., deld. ....	70.12	70.62	71.12	....					
<i>Chicago District</i>									
Chicago, I-3 .....	66.00	66.50	66.50	67.00					
S. Chicago, Ill., R2 .....	66.00	66.50	66.50	67.00					
S. Chicago, Ill., W14 .....	66.00	....	66.50	67.00					
Milwaukee, deld. ....	69.02	69.52	69.52	70.02					
Muskegon, Mich., deld. ....	....	74.52	74.52	....					
<i>Cleveland District</i>									
Cleveland R2, A7 .....	66.00	66.50	66.50	67.00					
Akron, Ohio, deld. ....	69.52	70.02	70.02	70.52					
<i>Mid-Atlantic District</i>									
Birdsboro, Pa., B10 .....	68.00	68.50	69.00	69.50					
Chester, Pa., P4 .....	68.00	68.50	69.00	....					
Swedeland, Pa., A3 .....	68.00	68.50	69.00	69.50					
New York, deld. ....	....	75.50	76.00	....					
Newark, N.J., deld. ....	72.69	73.19	73.69	74.19					
Philadelphia, deld. ....	70.41	70.91	71.41	71.99					
Troy, N.Y., R2 .....	68.00	68.50	69.00	69.50					
<i>Pittsburgh District</i>									
NevilleIsland, Pa., P6 .....	66.00	66.50	66.50	67.00					
Pittsburgh (N&S sides),									
Aliquippa, deld. ....	....	67.95	67.95	68.48					
McKeesRocks, Pa., deld. ....	....	67.60	67.60	68.13					
Lawrenceville, Homestead,									
Wilmerding, Monaca, Pa., deld. ....	....	68.26	68.26	68.79					
Verona, Trafford, Pa., deld. ....	68.29	68.82	68.82	69.35					
Brackenridge, Pa., deld. ....	68.60	69.10	69.10	69.63					
Midland, Pa., C18 .....	66.00	....	....	....					
<i>Youngstown District</i>									
Hubbard, Ohio, Y1 .....	....	....	66.50	....					
Sharpsville, Pa., S6 .....	66.00	....	66.50	67.00					
Youngstown Y1 .....	....	....	66.50	67.00					
Mansfield, Ohio, deld. ....	71.30	....	71.80	72.30					

## Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP Hot- Rolled*	BARS			Standard Structural Shapes	PLATES	
	Hot- Rolled	Cold- Rolled	Gal. 10 Ga.†	Stainless Type 302		H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Atlanta .....	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore .....	8.00	8.90	9.68	....	8.70	8.65	12.33 #	15.18	8.50	8.65	9.75
Birmingham .....	8.18	9.45	10.46	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston .....	9.38	10.44	11.45	53.50	9.42	9.73	12.90 #	15.28	9.63	9.72	11.20
Buffalo .....	8.25	9.00	11.07	55.98	8.50	8.80	11.00 #	15.00	8.90	8.90	10.45
Chattanooga .....	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago .....	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati .....	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland .....	8.18	9.45	10.20	52.33	8.33	8.69	10.80 #	14.74	9.01	8.79	10.11
Dallas .....	7.50	8.80	....	....	7.65	7.60	11.01	....	7.65	8.10	9.35
Denver .....	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit .....	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa. ....	8.20	9.45	9.95†®	....	8.50	8.75	9.05†®	....	9.00	8.85	10.10
Houston .....	7.10	8.40	8.45	54.32	7.25	7.20	11.10	13.50	7.25	7.70	8.95
Jackson, Miss. ....	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles .....	8.25*	10.30*	11.90*	57.60	8.90	8.70*	12.10*	16.10	8.50*	8.65*	10.80*
Memphis, Tenn. ....	8.55	9.80	....	....	8.60	8.97	11.96 #	....	9.01	8.93	10.56
Milwaukee .....	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill. ....	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York .....	8.87	10.13	10.56	53.08	9.31	9.57	12.76 #	15.09	9.35	9.43	10.66
Norfolk, Va. ....	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia .....	8.00	8.90	9.92	52.69	8.70	8.65	11.51 #	15.01	8.50	8.75	9.75**
Pittsburgh .....	8.18	9.45	10.45	52.00	8.33	8.60	10.80 #	14.65	8.64	8.56	9.88
Portland, Oreg. ....	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va. ....	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis .....	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul .....	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco .....	9.35	10.75	11.00	55.10	9.45†‡	9.70	13.00	16.00	9.50	9.60	12.00
Seattle .....	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn. ....	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane .....	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington ....	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

\*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; \$42 in. and under; \*\*½ in. and heavier; §§ annealed; §§ in. to 4 in. wide, inclusive; #1 in. round C-1018.

Base quantities, 2,000 to 4,999 lb except as noted; cold-rolled strip and cold-finished bars, 2,000 lb and over except in Seattle, 2,000 to 9,999 lb; stainless sheets, 8,000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg., 10,000 lb and in San Francisco, 2,000 to 4,999 lb; hot-rolled products on West Coast, 2,000 to 9,999 lb, except in Portland, Oreg., 1,000 to 9,999 lb; 2—30,000 lb; 5—1000 to 1999 lb; 10—2000 lb and over.



# Ferroalloys

## MANGANESE ALLOYS

**Spiegeleisen:** Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, \$105; 19-21% Mn, 1-3% Si, \$102.50; 16-19% Mn, \$100.50.

**Standard Ferromanganese:** (Mn 74-76%, C 7% approx) base price per net ton, \$245. Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract \$2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump \$253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add \$2.60 for each 1% above 81%; subtract \$2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

**High-Grade Low-Carbon Ferromanganese:** (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

**Medium-Carbon Ferromanganese:** (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 27.45c, less ton 29.6c. Delivered. Spot, add 0.25c.

**Manganese Metal:** 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

**Electrolytic Manganese Metal:** Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

**Silicomanganese:** (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

## TITANIUM ALLOYS

**Ferrotitanium, Low-Carbon:** (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, \$1.50 per lb of contained Ti; less ton \$1.55 (Ti 33-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot \$1.35, less ton \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

**Ferrotitanium, High-Carbon:** (Ti 15-18%, C 6-8%). Contract \$200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

**Ferrotitanium, Medium-Carbon:** (Ti 17-21%, C 2.4-5%). Contract \$225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

## CHROMIUM ALLOYS

**High-Carbon Ferrochrome:** Contract, c.l. lump, bulk 23.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

**Low-Carbon Ferrochrome:** Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton, add 5.1c. Delivered.

**Foundry Ferrochrome, High-Carbon:** (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2" x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

**Foundry Ferrosilicon Chrome:** (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

**Ferrochrome-Silicon:** Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

**Chromium Metal Electrolytic:** Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about  $\frac{1}{8}$ " thick) \$1.29 per lb, ton lot \$1.31, less ton lot \$1.33. Delivered. Spot, add 5c.

## VANADIUM ALLOYS

**Ferrovanadium:** Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, \$3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) \$3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) \$3.40.

**Grainal:** Vanadium Grainal No. 1 \$1.05 per lb; No. 79, 50c, freight allowed.

**Vanadium Oxide:** Contract less carload lot, packed, \$1.38 per lb contained  $V_2O_5$ , freight allowed. Spot, add 5c.

## SILICON ALLOYS

**50% Ferrosilicon:** Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

**Low-Aluminum 50% Ferrosilicon:** (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

**65% Ferrosilicon:** Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c, less ton 20.4c. Delivered. Spot, add 0.35c.

**75% Ferrosilicon:** Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

**90% Ferrosilicon:** Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

**Silicon Metal:** (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c, for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

**Alisfer:** (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

## ZIRCONIUM ALLOYS

**12-15% Zirconium Alloy:** (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

**35-40% Zirconium Alloy:** (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

## BORON ALLOYS

**Ferroboron:** (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, \$1.20 per lb of alloy; less than 100 lb \$1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) \$1.20; Grade C (19% min B) \$1.50.

**Borosil:** (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, \$5.25 per lb of contained B. Packed, carload \$5.40, ton to c.l. \$5.50, less ton \$5.60. Delivered.

**Bortam:** (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

**Carbortam:** (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

## CALCIUM ALLOYS

**Calcium-Manganese-Silicon:** (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

**Calcium-Silicon:** (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

## BRIQUETTED ALLOYS

**Chromium Briquets:** (Weighing approx 3% lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Ferromanganese Briquets:** (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l. packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicomanganese Briquets:** (Weighing approx  $\frac{3}{2}$  lb and containing 2 lb of Mn and approx  $\frac{1}{2}$  lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicon Briquets:** (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx  $\frac{1}{2}$  lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

**Molybde-Oxide Briquets:** (Containing  $\frac{2}{3}$  lb of Mo each). \$1.41 per pound of Mo contained, f.o.b. Langlof, Pa.

## TUNGSTEN ALLOYS

**Ferrotungsten:** (70-80%), 5000 lb W or more \$2.15 per lb (nominal) of contained W. Delivered.

## OTHER FERROALLOYS

**Ferrocolumbium:** (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, \$4 per lb of contained Cb; less ton lots, \$4.05 (nominal). Delivered.

**Ferrotantalum Columbium:** (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, \$3.80 per lb of contained Cb plus Ta, delivered; less ton lot \$3.85 (nominal).

**SMZ Alloy:** (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed  $\frac{1}{2}$ -in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

**Graphidox No. 5:** (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

**V-5 Foundry Alloy:** (Cr 33-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

**Simanal:** (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c; less than 2000 lb 21c per lb of alloy. Delivered.

**Ferrophosphorus:** (23-25% based on 24% P content with unitage of \$5 for each 1% of P above or below the base); carload, bulk, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn., \$120 per gross ton.

**Fermolybdenum:** (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langlof and Washington, Pa. \$1.68 in all sizes except powdered which is \$1.74.

**Technical Molybde-Oxide:** Per lb of contained Mo, in cans, \$1.39; in bags, \$1.38, f.o.b. Langlof and Washington, Pa.

# Scrap Advancing with Steel Rate

Mill buying is restricted, but broker inquiry gains and dealers' market position is strengthened by rising ingot operations. STEEL's index at \$36.67 is up another 84 cents a ton

Scrap Prices, Page 168

**Chicago**—The local scrap market is strengthening following last week's pushup of \$1 a ton. The same grades have advanced another \$1 on the strength of broker buying and have carried everything except the foundry items with them to the extent of \$1 to \$2 a ton.

There is some doubt the mills could buy, at least in volume, at currently listed quotations. Reasons: 1. Scrap generation is off because of vacation closings of metalworking plants. 2. Dealers aren't anxious to sell, thinking the market will rise more on the prospects of much higher steelmaking operations in the closing months of this year.

**Pittsburgh**—Scrap prices are holding up better than had been expected. Brokers look for a gradual improvement, but there have been no representative transactions between mills and brokers. Brokers are making more inquiries for material, and dealers are encouraged by this renewed interest even though they are not being offered any more for scrap than they received last month. Some think the Middle East trouble may strengthen the market.

On the basis of local mill purchases, No. 1 heavy melting remains at \$35-\$36. If a consumer sought to buy 5000 tons, the price undoubtedly would be higher. The Pennsylvania Railroad sold 500 tons of heavy melting at \$43.25, but it's

thought brokers paid that price to protect their investment in material on hand. Steel wheels sold higher (\$48.50) on speculation, but rail crops, angles, and splice bars declined.

**New York**—Brokers have advanced their buying prices on No. 1 heavy melting and No. 1 bundles to \$30-\$31, and on No. 2 heavy melting to \$27. They say little scrap is coming into yards, and that situation, combined with a stiffening in foreign demand, has strengthened the market on the major open hearth grades. Other grades are unchanged.

Spain has closed on about 85,000 tons of No. 1 and No. 2 heavy melting for shipment over the next four months. Inquiry from other European areas is reported quickening.

**Philadelphia** — Prices on No. 1 heavy melting, No. 1 bundles, and No. 1 busheling have been advanced \$1 a ton on relatively small sales and are now quoted \$35, delivered. Similarly, No. 2 heavy melting advanced to \$31.

**Boston**—Shipments to district and eastern Pennsylvania consuming points are light. The steelmaking grades are dragging bottom. The cast iron grades are also slow, foundries paying \$40-\$42, delivered, for No. 1 machinery cast. Consumers insist on top quality material at that price.

Lower freight rates, Portland, Maine, from Bangor, Bath and other Maine origin points, have been posted in lieu of former mileage commodity rates.

**Cleveland**—Despite the absence of active demand, the market tone is stronger. Prices are unchanged on the basis of last sales in the Valley at \$38-\$39 for No. 1 heavy melting steel. Should steelmaking operations continue to rise (the Cleveland area ingot rate went up 11 points last week to 48.5 per cent) scrap would quickly go up a couple dollars a ton, say observers. Auto lists are expected to bring higher prices at the end of the month.

(Please turn to Page 173)

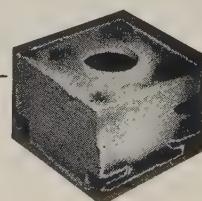
QUANTITY  
PRODUCTION  
OF  
**GREY IRON  
CASTINGS**

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ONE OF THE  
NATION'S LARGEST  
AND MOST MODERN  
PRODUCTION  
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ESTABLISHED 1866  
**THE WHELAND  
COMPANY**  
CHATTANOOGA 2, TENN.

**EUREKA FIRE BRICK WORKS**  
Works: Mt. Braddock, Fayette Co., Pa.  
Dunbar, Pa. . . . 4213

**COVERED HOT TOP BRICK  
INGOT MOLD PLUGS**



Sales Office  
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**AIR-CONDITIONED  
Guest Rooms**



NOW you can be sure  
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room when you  
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Teletype: BA 263.

**The  
Lord Baltimore  
HOTEL**

**HAWKRIDGE METALS  
CORPORATION**

North Hampton, New Hampshire

Producers and Sellers of Ductile

**TITANIUM &  
ZIRCONIUM  
POWDERS**

ALL MESHES

HIGH PURITY ..... 99.2%  
COMMERCIAL ..... 98.6%

# Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, July 16, 1958. Changes shown in italics.

## STEELMAKING SCRAP COMPOSITE

July 16	\$36.67
July 9	35.83*
June Avg.	35.50
July 1957	54.67
July 1953	43.51

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

\*Revised

## PITTSBURGH

No. 1 heavy melting...	35.00-36.00
No. 2 heavy melting...	30.00-31.00
No. 1 dealer bundles...	35.00-36.00
No. 2 bundles ...	26.00-27.00
No. 1 busheling ...	35.00-36.00
No. 1 factory bundles...	40.00-41.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings ..	19.00-20.00
Cast iron borings ...	19.00-20.00
Cut structurals:	
2 ft and under ...	39.00-40.00
3 ft lengths .....	37.00-38.00
Heavy turnings .....	31.00-32.00
Punchings & plate scrap	40.00-41.00
Electric furnace bundles	40.00-41.00

### Cast Iron Grades

No. 1 cupola .....	39.00-40.00
Stove plate .....	39.00-40.00
Unstripped motor blocks	23.00-24.00
Clean auto cast .....	39.00-40.00
Drop broken machinery	48.00-49.00

### Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 2 ft and under.	53.00-54.00
Rails, 18 in. and under	54.00-55.00
Random rails .....	50.00-51.00
Railroad specialties ...	47.00-48.00
Angles, splice bars ..	44.00-45.00
Rails, rerolling .....	58.00-59.00

### Stainless Steel Scrap

18-8 bundles & solids ..	180.00-185.00
18-8 turnings .....	100.00-105.00
430 bundles & solids ..	100.00-105.00
430 turnings .....	50.00-52.00

## CHICAGO

No. 1 hvy melt., indus.	40.00-41.00
No. 1 hvy melt., dealer	38.00-39.00
No. 2 heavy melting...	35.00-36.00
No. 1 factory bundles ..	44.00-45.00
No. 1 dealer bundles ..	39.00-40.00
No. 2 bundles .....	28.00-29.00
No. 1 busheling, indus.	40.00-41.00
No. 1 busheling, dealer	38.00-39.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings ..	22.00-23.00
Cast iron borings .....	22.00-23.00
Cut structurals, 3 ft ..	43.00-44.00
Punchings & plate scrap	44.00-45.00

### Cast Iron Grades

No. 1 cupola .....	41.00-42.00
Stove plate .....	39.00-40.00
Unstripped motor blocks	34.00-35.00
Clean auto cast .....	47.00-48.00
Drop broken machinery	47.00-48.00

### Railroad Scrap

No. 1 R.R. heavy melt.	43.00-44.00
R.R. malleable .....	54.00-55.00
Rails, 2 ft and under ..	55.00-56.00
Rails, 18 in. and under	55.00-57.00
Angles, splice bars ..	50.00-51.00
Axes .....	62.00-63.00
Rails, rerolling .....	57.00-58.00

### Stainless Steel Scrap

18-8 bundles & solids ..	180.00-185.00
18-8 turnings .....	95.00-100.00
430 bundles & solids ..	95.00-100.00
430 turnings .....	50.00-55.00

## YOUNGSTOWN

No. 1 heavy melting ..	38.00-39.00
No. 2 heavy melting...	27.00-28.00
No. 1 busheling .....	38.00-39.00
No. 1 bundles .....	38.00-39.00
No. 2 bundles .....	24.00-25.00
Machine shop turnings ..	12.00-13.00
Short shovel turnings ..	17.00-18.00
Cast iron borings .....	17.00-18.00
Low phos. ....	37.00-38.00
Electric furnace bundles	39.00-40.00

### Railroad Scrap

No. 1 R.R. heavy melt.	41.00-42.00
------------------------	-------------

## CLEVELAND

No. 1 heavy melting ..	34.50-35.50
No. 2 heavy melting...	24.00-25.00
No. 1 factory bundles.	38.00-39.00
No. 1 bundles .....	34.50-35.50
No. 2 bundles .....	20.00-21.00
No. 1 busheling .....	34.50-35.50
Machine shop turnings ..	9.00-10.00
Short shovel turnings ..	13.00-14.00
Mixed borings, turnings	13.00-14.00
Cast iron borings .....	13.00-14.00
Cut foundry steel .....	37.00-38.00
Cut structurals, plates 2 ft and under ..	39.00-40.00
Low phos, punchings & plate .....	34.00-35.00
Alloy free, short shovel turnings .....	16.00-17.00
Electric furnace bundles	35.50-36.50

### Cast Iron Grades

No. 1 cupola .....	42.00-43.00
Charging box cast .....	33.00-34.00
Heavy breakable cast .....	33.00-34.00
Stove plate .....	43.00-44.00
Unstripped motor blocks	25.00-26.00
Brake shoes .....	33.00-34.00
Clean auto cast .....	42.00-43.00
Burnt cast .....	30.00-31.00
Drop broken machinery	47.00-48.00

### Railroad Scrap

R.R. malleable .....	60.00-61.00
Rails, 2 ft and under ..	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths ..	49.00-50.00
Cast steel .....	44.00-45.00
Railroad specialties ..	47.00-48.00
Uncut tires .....	40.00-41.00
Angles, splice bars ..	46.00-47.00
Rails, rerolling .....	51.00-52.00

### Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)	
18-8 bundles, solids .....	170.00-175.00
18-8 turnings .....	95.00-100.00
430 clips, bundles, solids .....	80.00-90.00
430 turnings .....	40.00-50.00

### ST. LOUIS

(Brokers' buying prices)	
No. 1 heavy melting ..	33.00
No. 2 heavy melting ..	30.00
No. 1 bundles .....	34.00
No. 2 bundles .....	23.00
No. 1 busheling .....	33.00
Machine shop turnings ..	16.00†
Short shovel turnings ..	18.00†

### Cast Iron Grades

No. 1 cupola .....	43.00
Charging box cast .....	35.00
Heavy breakable cast .....	33.00
Unstripped motor blocks	35.00
Clean auto cast .....	44.00
Stove plate .....	42.00

### Railroad Scrap

No. 1 R.R. heavy melt.	36.50
Rails, 18 in. and under ..	50.00
Rails, random lengths ..	45.50
Rails, rerolling .....	56.00
Angles, splice bars .....	47.00

### BIRMINGHAM

No. 1 heavy melting...	30.00-31.00
No. 2 heavy melting...	25.00-26.00
No. 1 bundles .....	30.00-31.00
No. 2 bundles .....	19.00-20.00
No. 1 busheling .....	30.00-31.00
Cast iron borings .....	12.00-13.00
Machine shop turnings ..	20.00-21.00
Short shovel turnings ..	21.00-22.00
Bars, crops and plates ..	40.00-41.00
Structurals & plates ..	39.00-40.00
Electric furnace bundles	34.00-35.00
Electric furnace:	
2 ft and under ..	35.00-36.00
3 ft and under ..	34.00-35.00

### Cast Iron Grades

No. 1 cupola .....	51.00-52.00
Stove plate .....	51.00-52.00
Unstripped motor blocks	40.00-41.00
Charging box cast .....	22.00-23.00
No. 1 wheels .....	37.00-38.00

### Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
Rails, 18 in. and under	46.00-47.00
Rails, rerolling .....	54.00-55.00
Rails, random lengths ..	44.00-45.00
Angles, splice bars .....	40.00-41.00

## PHILADELPHIA

No. 1 heavy melting ..	35.00
No. 2 heavy melting ..	31.00
No. 1 bundles .....	35.00
No. 2 bundles .....	24.00
No. 1 busheling .....	35.00
Electric furnace bundles	36.00
Mixed borings, turnings ..	17.00†
Short shovel turnings ..	19.00
Machining shop turnings ..	17.00
Heavy turnings .....	29.00
Structural & plate .....	39.00-40.00
Couplers, springs, wheels ..	43.50
Rail crops, 2 ft & under	55.00-56.00

### Cast Iron Grades

No. 1 cupola .....	38.00
Heavy breakable cast .....	41.00
Malleable .....	58.00-59.00†
Drop broken machinery	47.00-48.00

### DETROIT

# THE NEW LOGEMANN MODEL 500-PF HIGH SPEED SCRAP PRESS

The LOGEMANN Model 500-PF press is a high-speed, high-density horizontal two compression unit. It is filled from a hopper supermounted above the compression box and discharges the compressed bale through a side opening. The operating cycle is automatic and continuous, or manual at the option of the operator.

**FAST LOADING! FAST BALING!  
FAST DISCHARGE!**

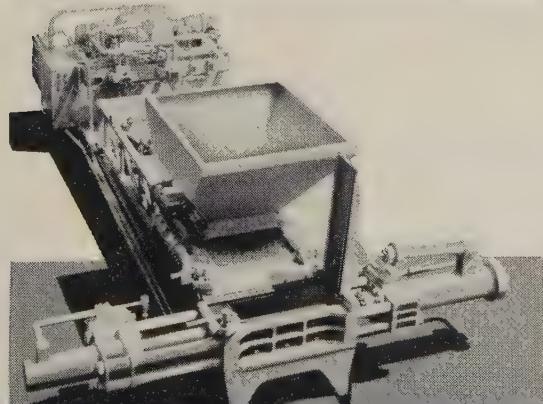
Here is a two-compression, side-ejection press designed for high production — up to 240 bales per hour.

It is able to bale sheet clips, stamping skeletons, wire, cans, steel, copper, brass and aluminum scrap.

No pit required for installation. Can be operated by setting on the floor and connecting to an electric power source.



BALE SIZE                    6" x 12" x 8" (VARIABLE)  
BALE WEIGHT                40 LBS. AVERAGE  
PRODUCTION                UP TO 240 BALES PER HOUR



## Designed for HIGH PRODUCTION

Here is a new high speed scrap press . . . geared for high production and extra baling profits for you. Famous "engineered" features, proved through actual operation, are built into this press to give you constant, uninterrupted service. It's a top-loading side-ejection press that can handle a variety of scrap. Write for the new Bulletin No. 220; it will give you complete information concerning design, pumping unit, valve assembly and accessory equipment. When making your inquiries please state the nature of your scrap and the tonnage desired.



# LOGEMANN BROTHERS CO.

3126 W. BURLEIGH STREET • MILWAUKEE 45, WISCONSIN

# Will Aluminum Price Rise?

Producers would like to increase quotations, but they won't consider a move unless steel goes up. Copper and zinc statistics show June improvement

Nonferrous Metal Prices, Pages 172 & 173

**ALUMINUM PRODUCERS** would like nothing better than to jack up prices around 8 per cent when they get hit with higher labor costs on Aug. 1. But they candidly admit market conditions may not permit such a move.

**More Expenses**—Here's how the industry would justify an increase: The upcoming labor package calls for an 8 cent an hour wage hike, a 4 cent cost of living adjustment, and 4 cents in fringe benefits. Counting the 3 cents the higher hourly rate will add to social security and welfare costs and the 5 cents per hour cost of living adjustment granted Feb. 1, you have a total 1958 wage increase of 24 cents an hour.

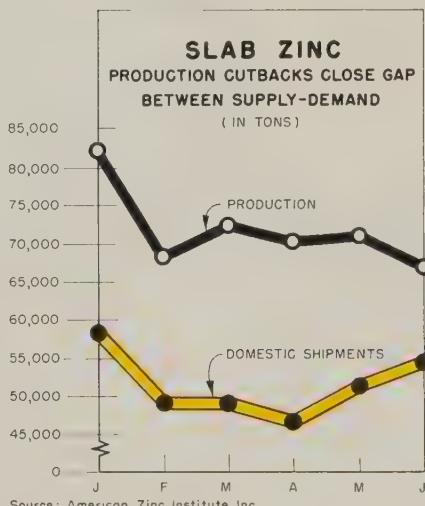
Another factor: The industry's reduced output has hiked the per pound cost. Capacity now stands at 2,062,500 tons, but the current operating rate is around 1,459,000 tons per year. Much of the idle capacity was built with borrowed money, which means the industry has to make payments on unproductive facilities.

Aluminum products cost around 8 per cent less than they did last fall as a result of the price drop on Apr. 1. It means profits in the second and third quarters will be well below those of the first quarter, which, in turn, were under those for the same period of 1957. Examples: Aluminum Co. of America had first quarter profits of \$11,459,000, compared with \$18,594,000 in 1957; Kaiser Aluminum & Chemical Corp., earned \$6,419,000, compared with \$8,267,000. Reynolds Metals Co. was the only producer to improve (\$9,910,345, compared with \$9,880,571), but the gain was mainly because it had a contract calling for large puts to the government during the period.

**Price Guides**—Watch what steel prices do as indication of what

could happen in aluminum. Producers admit they stand little chance of putting through an increase unless steel leads the way.

Even if steel goes up, aluminum faces another possible price deter-



Source: American Zinc Institute Inc.

rent: The big Canadian competitor, Aluminium Ltd., might not follow. Aluminium Ltd. triggered the spring price drop with the announcement that it was lowering quotations on a world-wide basis to stimulate demand. There's no indication the firm has changed its stand, although domestic companies say they can't see that the adjustment improved business. One thing's certain: If Aluminium won't

go along with a hike (and the company hasn't stated its position yet), domestic producers won't be able to go higher.

## Metal Statistics Better

Copper and zinc improved in June as shipments rose and production fell.

U. S. refined copper deliveries to fabricators hit 100,296 tons for the best month since January and a marked improvement over the 78,631 tons shipped in May, reports the Copper Institute. At the same time, refined production dropped to 107,474 tons, the lowest output any month this year. Result: Refined stocks decreased by about 9000 tons to 244,421 tons.

July sales aren't holding up to June levels, mainly because of traditional vacation shutdowns in the brass mill industry. Custom smelters aren't booking much business at the 26 cent a pound figure, but it's likely the price will hold for the present. The price split ended in primary copper—Phelps Dodge, Anaconda, and Kennecott are now all quoting 26.5 cents a pound.

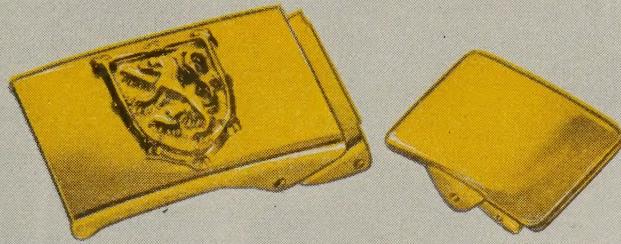
The June zinc report parallels that of copper: Domestic shipments climbed while production dropped (see chart). The main difference is that zinc showed a 12,000-ton gain and stands at 252,979 tons.

Demand is still at mediocre levels. The London Metal Exchange was down to where European metal could be brought in at under the domestic price, but it rebounded on the news of U. S. troops being sent to Lebanon. This speculative strength in the market should add some muscle to the present price.

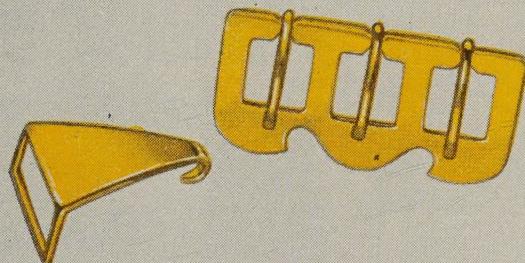
## NONFERROUS PRICE RECORD

	Price July 16	Last Change	Previous Price	June Avg	May Avg	July, 1957 Avg
Aluminum .	24.00	Apr. 1, 1958	26.00	24.000	24.000	25.000
Copper .....	26.00-26.50	July 16, 1958	25.00-26.50	25.400	24.433	28.822
Lead .....	10.80	July 1, 1958	11.30	11.040	11.512	13.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel .....	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin .....	94.75	July 16, 1958	94.25	94.701	94.510	96.576
Zinc .....	10.00	July 1, 1957	10.50	10.000	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.



**Polishing  
rejects down  
from 8% to 1%**



Metal Buckles by Domar Buckle Mfg. Co.

**Withstands 3-4 time  
reduction in  
difficult deep draw**



Flower Pot is 4½" high x 5" diameter

## **CHASE® S-19 PROCESS BRASS STRIP GIVES YOU EXACT "JOB-TAILORED" SPECIFICATIONS PLUS SAVINGS**

L&R Metal Products Division of Domar Buckle Mfg. Co. reports reduction in polishing rejects from 8% to 1%, plus additional 5% saving traceable to careful gauge control used in making Chase S-19 Process Brass Strip and Sheet.

Artistic Manufacturing Company says: "Our flowerpot is a tough draw. We draw, reduce 3-4 times, anneal, hammer, polish, then lacquer. Chase S-19 Brass has consistent quality, and never orange peels in spite of the tough handling."

These are two of hundreds of cases where users have made production savings with Chase S-19 Process Brass Strip and Sheet. This Chase exclusive process can provide metal of 40-62 Rockwell B with a "job-tailored" list of properties to meet exact and specific needs. With S-19, you can order *and get* the right combination of elongation, tensile, yield and grain size. And you get still more—unrivalled surface that takes a final finish with minimum buffing, combined with fatigue resistance no other strip or sheet can match. Be sure to ask your Chase Representative how S-19 Process Brass can help you to a better product at lower cost. You can reach him locally, or by writing Waterbury 20, Connecticut.

**Chase**   
**BRASS & COPPER CO.**  
 WATERBURY 20, CONN.  
 Subsidiary of  
**Kennecott Copper Corporation**



*The Nation's Headquarters for Brass, Copper and Stainless Steel*

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L.I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

# Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

## PRIMARY METALS AND ALLOYS

**Aluminum:** 99.5%, pigs, 24.00; ingots, 26.10, 30,000 labor more, f.o.b. shipping point. Freight allowed on 500 lb or more.

**Aluminum Alloy:** No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90, 30-lb ingots.

**Antimony:** R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50; f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

**Beryllium:** 97% lump or beads, \$71.50 per lb, f.o.b. Cleveland or Reading, Pa.

**Beryllium Aluminum:** 5% Be, \$74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

**Beryllium Copper:** 3.75-4.25% Be, \$42 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

**Bismuth:** \$2.25 per ton, ton lots.

**Cadmium:** Sticks and bars, \$1.55 per lb del'd. **Cobalt:** 97.99%, \$2.00 per lb for 550-lb keg; \$2.02 per lb for 100 lb case; \$2.07 per lb under 100 lb.

**Columbium:** Powder, \$55-85 per lb, nom.

**Copper:** Electrolytic, 25.00-26.50 del'd.; custom smelters, 26.00; lake, 25.00-26.50 del'd.; fire refined, 24.75-26.25 del'd.

**Germanium:** First reduction, \$179.17-197.31 per lb; intrinsic grade, \$197.31-220 per lb, depending on quantity.

**Gold:** U.S. Treasury, \$35 per oz.

**Indium:** 99.9%, \$2.25 per troy oz.

**Iridium:** \$70-80 nom. per troy oz.

**Lead:** Common, 10.80; chemical, 10.90; corrod'ing, 10.90, St. Louis. New York basis, add 0.20.

**Lithium:** 98 + %, 50-100 lb, cups or ingots, \$12; rod, \$15; shot or wire, \$16. 100-500 lb, cups or ingots, \$10.50; rod, \$14; shot or wire, \$15, f.o.b. Minneapolis.

**Magnesium:** Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

**Magnesium Alloys:** AZ91A (diecasting), 40.75 del'd.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

**Mercury:** Open market, spot, New York, \$228-230 per 76-lb flask.

**Molybdenum:** Unalloyed, turned extrusions, 3.75-5.75 in. round, \$9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

**Nickel:** Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

**Osmium:** \$70-100 per troy oz nom.

**Palladium:** \$19-21 per troy oz.

**Platinum:** \$62-70 per troy oz from refineries.

**Radium:** \$16-21.50 per mg radium content, depending on quantity.

**Rhodium:** \$118-125 per troy oz.

**Ruthenium:** \$45-55 per troy oz.

**Selenium:** \$7.00 per lb, commercial grade.

**Silver:** Open market 88.625 per troy oz.

**Sodium:** 17.00, c.l.; 19.00-19.50 l.c.l.

**Tantalum:** Rod, \$60 per lb; sheet, \$55 per lb.

**Tellurium:** \$1.65-1.85 per lb.

**Thallium:** \$7.50 per lb.

**Tin:** Straits, N. Y., spot and prompt, 94.75.

**Titanium:** Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), \$1.82 per lb.

**Tungsten:** Powder, 98.8%, carbon reduced. 1000-lb lots, \$3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, \$3.85.

**Zinc:** Prime Western, 10.00; brass special, 10.25; intermediate, 10.50. East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 del'd. Diecasting alloy ingot No. 3, 12.75; No. 2, 13.25; No. 5, 13.00 del'd.

**Zirconium:** Sponge, commercial grade, \$5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

## SECONDARY METALS AND ALLOYS

**Aluminum Ingot:** Piston alloys, 22.50-24.00; No. 12 foundry alloy (No. 2 grade), 21.25-21.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 108 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 22.25; grade 2, 21.25; grade 3, 20.00; grade 4, 17.25.

**Brass Ingot:** Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

**Magnesium Alloy Ingot:** AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

## NONFERROUS PRODUCTS

### BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, \$1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, \$1.78, f.o.b. Temple, Pa.

### COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.35; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53. Magnet wire del'd., 38.43, before quantity discounts.

### LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, \$15.50 per cwt; pipe, full coils, \$15.50 per cwt; traps and bends, list prices plus 30%.

### TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, \$8.50-15.95; sheared mill plate, \$6.00-9.50; wire, \$6.50-11.00; forging billets, \$4.10-4.35; hot-rolled and forged bars, \$5.25-6.35.

### ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

### ZIRCONIUM

Plate, \$12.50-19.20; H.R. strip, \$12.50-22.90; C.R. strip, \$15.90-31.25; forged or H.R. bars, \$11.00-17.40.

### NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R. ....	126	106	128
Strips, C.R. ....	124	108	138
Plate, H.R. ....	120	105	121
Rod, Shapes, H.R. ....	107	89	109
Seamless Tubes ....	157	129	200

### ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

#### Thickness

Range,	Flat	Coiled	
Inches	Sheet	Sheet	
0.249-0.136	41.10-45.60	.....	
0.135-0.096	41.60-46.70	.....	
0.125-0.096	.....	38.50-39.10	
0.096-0.077	42.30-48.50	38.50-39.30	
0.076-0.061	42.90-50.80	38.50-40.00	
0.060-0.048	43.60-53.10	39.40-41.10	
0.047-0.038	44.20-55.90	39.90-42.50	
0.037-0.030	44.60-60.90	40.30-44.30	
0.029-0.024	45.20-52.70	40.60-45.00	
0.023-0.019	46.20-56.10	41.70-43.40	
0.018-0.017	47.00-53.40	42.30-44.00	
0.016-0.015	47.90-54.30	43.10-44.80	
0.014	48.90	44.10-45.80	
0.013-0.012	50.10	44.80	
0.011	51.10	46.00	
0.010-0.0095	52.60	47.40	
0.009-0.0085	53.90	48.90	
0.008-0.0075	55.50	50.10	
0.007	57.00	51.60	
0.006	58.60	53.00	

## BRASS MILL PRICES

### MILL PRODUCTS a

	Sheet,	Strip,	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings	SCRAP ALLOWANCES e (Based on copper at 26.50c)
Copper .....	48.13-49.63b	45.36-46.86c	.....	48.32-49.82	22.500	22.500	21.750	.....	
Yellow Brass .....	42.69-43.57	29.53-30.28d	43.23-44.11	45.60-46.48	17.000	16.750	15.250	.....	
Low Brass, 80% .....	44.90-46.03	44.84-45.97	45.44-46.57	47.71-48.84	19.000	18.750	18.250	.....	
Red Brass, 85% .....	45.67-46.89	45.61-46.83	46.21-47.43	48.48-49.70	19.750	19.500	19.000	.....	
Com. Bronze, 90% .....	46.98-48.30	46.92-48.24	47.52-48.84	49.54-50.86	20.625	20.375	19.875	.....	
Manganese Bronze .....	50.81-51.52	44.91-45.74	55.44-56.18	.....	15.875	15.625	14.875	.....	
Muntz Metal .....	45.19-45.95	41.00-41.76	.....	.....	15.875	15.625	15.125	.....	
Naval Brass .....	47.07-47.83	43.38-42.14	54.13-54.89	50.48-50.99	15.625	15.375	14.875	.....	
Silicon Bronze .....	52.84-54.37	52.03-53.56	52.88-54.41	54.77-56.29	22.125	21.875	21.125	.....	
Nickel Silver .....	57.39-58.82	60.26-61.15	.....	.....	22.000	21.750	21.125	.....	
Phos. Bronze, A-5% .....	67.17-68.59	67.67-69.09	68.85-70.72	23.375	23.125	22.125	.....	.....	
a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Free cutting. c. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.									

## ALUMINUM (continued)

**Plates and Circles:** Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F ....	41.70	46.50
5050-F .....	42.80	47.60
3004-F .....	43.80	49.50
5052-F .....	44.40	50.20
6061-T6 .....	44.90	51.00
2024-T4 .....	48.60	55.40
7075-T6* .....	56.40	64.00

\*24-48 in. width or diam., 72-180 in. lengths.

**Screw Machine Stock:** 30,000 lb base. Diam. (in.) or —Round— —Hexagonal— across flats 2011-T3 2017-T4 2011-T3 2017-T4

Drawn	0.125	76.20	73.20	.....	.....
0.156	64.20	61.40	.....	.....	.....
0.172	.....	61.40	.....	.....	.....
0.188	64.20	61.40	.....	79.60	.....
0.203	64.20	61.40	.....	.....	.....
0.219-0.234	61.00	59.50	.....	.....	.....
0.250	61.00	59.50	88.40	75.90	.....
0.266-0.281	61.00	59.50	.....	.....	.....
0.313	61.00	59.50	81.40	72.20	.....
0.344	60.50	59.50	81.40	72.20	.....

Cold-Finished	Alloy	Alloy
0.375-0.547	60.50	59.30
0.563-0.688	60.50	59.30
0.719	57.70	.....
0.750-1.000	59.00	57.70
1.063	59.00	57.70
1.250-1.500	56.60	55.40

**Rolled** 1.563 55.00 53.70 ..... 55.50 1.625-2.000 54.30 52.90 59.60 55.50 2.063 ..... 51.40 ..... 55.50 2.125-2.500 52.80 51.40 ..... 55.50 2.500-3.000 51.20 49.70 ..... 55.50 3.250-3.375 ..... 49.70 ..... 55.50

**Forging Stock:** Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper; 2014, 41.50-54.30; 6061, 40.90-54.30; 7075, 42.90-56.30; 6079, 43.40-56.80.

**Pipe:** ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¼ in., 18.60; 1 in., 29.35; 1½ in., 39.75; 2½ in., 47.50; 2 in., 57.40; 4 in., 157.60; 6 in., 282.95; 8 in., 425.80.

**Extruded Solid Shapes:** Com. Grade (AZ31C) (AZ31B) Spec. Grade

Factor	Alloy	Alloy
9-11	6063-T5	6062-T6
12-14	42.00-43.50	59.30-63.80
15-17	42.00-43.50	60.50-65.50
18-20	42.50-44.00	62.50-68.10

**MAGNESIUM** Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; 125 in., 70.40; 188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .1

positions turnings, 15.00-15.50; new brass clip-pings, 13.50-14.00; light brass, 9.50-10.00; heavy yellow brass, 11.00-11.50; new brass rod ends, 11.50-12.00; auto radiators, unsweated, 12.00-12.50; cocks and faucets, 13.00-13.50; brass pipe, 13.00-13.50.

**Lead:** Heavy, 6.75-7.25; battery plates, 3.00-3.25; linotype and stereotype, 9.25-9.75; electrotypes, 7.50-8.00; mixed babbitt, 9.00-9.50.

**Manganese:** Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

**Nickel:** Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

**Zinc:** Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

**Aluminum:** Old castings and sheets, 9.50-10.00; clean borings and turnings, 6.00-6.50; segregated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 13.00-14.00; mixed high copper clips, 11.00-11.50.

(Cents per pound, Chicago)

**Aluminum:** Old castings and sheets, 10.00-10.50; clean borings and turnings, 9.00-9.50; segregated low copper clips, 15.50-16.00; segregated high copper clips, 14.00-14.50; mixed low copper clips, 15.00-15.50; mixed high copper clips, 13.50-14.00.

(Cents per pound, Cleveland)

**Aluminum:** Old castings and sheets, 9.00-9.50; clean borings and turnings, 8.00-8.50; segregated low copper clips, 12.50-13.00; segregated high copper clips, 11.00-11.50; mixed low copper clips, 11.50-12.00; mixed high copper clips, 10.50-11.00.

#### REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery) **Beryllium Copper:** Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

**Copper and Brass:** No. 1 heavy copper and wire, 21.50; No. 2 heavy copper and wire, 20.75; light copper, 18.50; refinery brass (60% copper) per dry copper content, 19.75.

#### INGOTMAKERS' BUYING PRICES

**Copper and Brass:** No. 1 heavy copper and wire, 21.50; No. 2 heavy copper and wire, 20.75; light copper, 18.50; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.25; yellow brass turnings, 12.25; radiators, 15.00.

#### PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

#### ANODES

**Cadmium:** Special or patented shapes, \$1.55.

**Copper:** Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb.; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.

**Nickel:** Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

**Tin:** Bar or slab, less than 200 lb, 112.50; 200-199 lb, 111.00; 500-999 lb, 110.50; 1000 lb or more, 110.00.

**Zinc:** Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

#### CHEMICALS

**Cadmium Oxide:** \$1.70 per lb in 100-lb drums.

**Chrome Acid (flake):** 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

**Copper Cyanide:** 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

**Copper Sulfate:** 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

**Nickel Chloride:** 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

**Nickel Sulfate:** 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.

**Sodium Cyanide (Cyanobrik):** 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

**Sodium Stannate:** Less than 100 lb, 75.80; 100-500 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 52.20; 10,000 lb or more, 60.80.

**Stannous Chloride (anhydrous):** 10 lb, 100.75; 25 lb, 100.507; 100 lb, 100.459; 400 lb, 100.434; 300-19,900 lb, 100.026; 20,000 lb or more, 96.50.

**Stannous Sulphate:** Less than 50 lb, 100.361; 50 lb, 100.061; 100-1900 lb, 100.041; 2000 lb or more, 100.021.

**Zinc Cyanide:** 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 167)  
largely because of shrinking tonnage.

**Cincinnati**—Prices on the No. 1 grades have regained ground lost earlier this month, and mixed borings and turnings have moved higher.

**Buffalo**—Cast scrap prices eased \$1 a ton in this market last week. With most foundries closed for vacations, and demand for scrap light, a small sale of cupola grade went at \$38-\$39, off \$1 a ton from the last sale. No. 1 machinery cast also dropped \$1.

**Detroit**—Area dealers and brokers think the local market is due for an upsurge by the end of August, or in early September, as new model automobiles start rolling from assembly lines and the demand for steel improves. As a result, the market is

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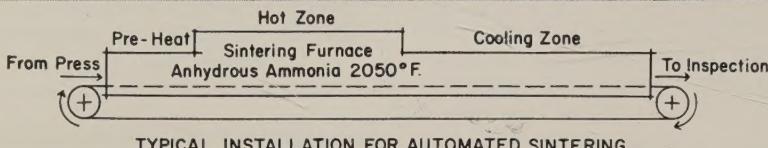
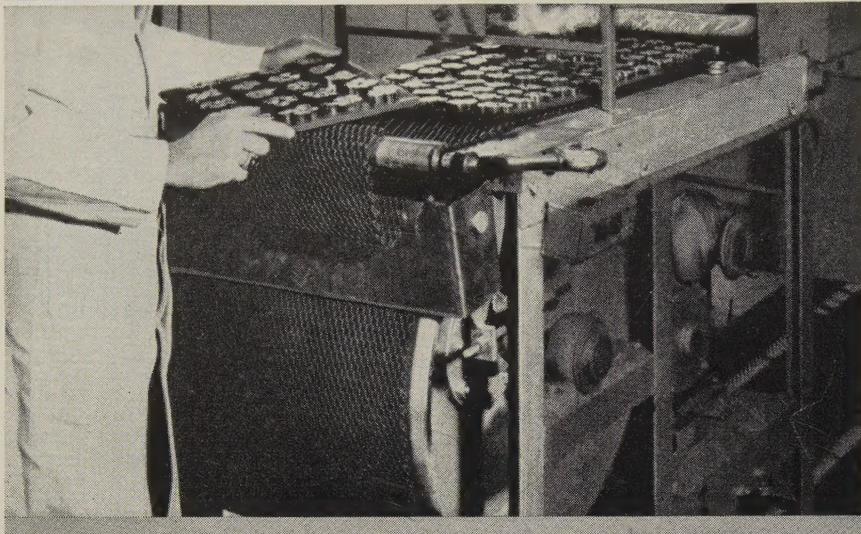
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slightly more active on the dealer level.

**Boston**—Borings and turnings are slightly firmer here. Brokers are paying \$1 more for tonnage, offering \$6-\$7 for machine shop turnings and mixed borings and turnings.

**St. Louis**—Scrap prices are unchanged here save for the cast iron grades which are moving slightly upward on demand pressure from outside the district.

**Birmingham**—Principal activity in the local scrap market is in electric furnace grades.

**Houston**—The only Texas mill to purchase scrap this month has extended shipments on its outstanding July commitments through August. The move is believed to indicate that its buying will be limited next month.

**San Francisco**—Scrap dealers are marking time here. The mills are taking in a little material, but not enough to jog the district market.

**Los Angeles**—Dealers report the local market appears to be softening, but so far prices are unchanged.

**Seattle**—The scrap market is unchanged. Dealers anticipate slow demand over coming weeks. Yards are operating on reduced schedules.

## Freight Compromise Wins

The Southern Freight Association has accepted a compromise freight rate proposal that raises scrap rates 3 per cent, maximum 40 cents per ton, in place of the flat 40 cents a ton approved earlier this year by the Interstate Commerce Commission.

Earlier, the Chicago & Northwestern acted independently of other Midwest roads to institute the 3 per cent, maximum 40 cents, rate.

## Germany Needs Scrap

West Germany, which has relied heavily on American scrap since World War II, still needs tonnage from this country, though more domestic scrap is available in Germany and from other European Coal & Steel Community countries, reports Edwin C. Barringer, executive vice president, Institute of Scrap Iron & Steel Inc. German steel mill operations, have declined, but less than those in the U. S. In the opinion of leading German economists, the U. S. will start pulling out of its recession this fall, to avert a major depression in Europe.